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SESSIONAL PAPERS

VOLUME 5

FIFTH SESSION OF THE THIRTEENTH PARLIAMENT

OF THE

DOMINION OF CANADA

SESSION 1921

169497
24.2.22

VOLUME LVII

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1. Report of the Auditor General for the year ended March 31, 1920, Volume I, Parts a-b—A to J, Volume II, Parts K to SS. Presented by Sir Henry Drayton, March 8, 1921.
Printed for distribution and sessional papers.

Report of the Auditor General for the year ending 31st March, 1920, Volume III, Parts T to Z. Presented by Sir Henry Drayton, March 11, 1921.
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Report of the Auditor General for the year ended March 31, 1920, Volume IV, Part ZZ. Presented by Hon. Mr. Meighen April 4, 1921.
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2. The Public Accounts of Canada, for the fiscal year ended March 31, 1920. Presented by Sir Henry Drayton, March 1, 1921....*Printed for distribution and sessional papers.*

3. Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1921. Presented by Sir Henry Drayton, March 8, 1921.
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4. Supplementary Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1922. Presented by Sir Henry Drayton, April 5, 1921.
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5. Further Supplementary Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1921. Presented by Sir Henry Drayton, May 26, 1921.....*Printed for distribution and sessional papers.*

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5*b*. Further Supplementary Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1922. Presented by Sir Henry Drayton, June 3, 1921.....*Printed for distribution and sessional papers.*

8. Report of the Superintendent of Insurance of the Dominion of Canada for the year ended 31st December, 1919—Volume I, Insurance Companies other than Life; Volume II, Life Insurance Companies. Presented by Sir Henry Drayton, February 16, 1921.
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9. Abstract of Statements of Insurance Companies in Canada, year ending December 31, 1920. Not presented.....*Printed for distribution and sessional papers.*

10. Report of the Department of Trade and Commerce for the fiscal year ended March 31, 1920. Not presented.....*Printed for distribution and sessional papers.*

10*a* Report relating to Mail Subsidies and Steamship Subventions, as controlled by the Department of Trade and Commerce, for the fiscal year ending March 31, 1920, with traffic returns, etc., to December 31, 1920. Presented by Sir George Foster, June 4, 1921 .....*Printed for distribution and sessional papers.*

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10f. Report of the Commissioner of Patents for the firscal year ended March 31, 1920. Presented by Sir George Foster, February 18, 1921.
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11. Report of the Department of Customs and Inland Revenue, containing accounts of revenue with statements relative to the Imports, Exports, Customs and Inland Revenue of the Dominion of Canada, for the fiscal year ended March 31, 1920. Presented by Hon. Mr. Wigmore, February 18, 1921.
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12. Report of the Department of Health for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Calder, April 19, 1921.....*Printed for distribution and sessional papers.*

13. Report of By-Elections for the House of Commons of Canada, held during the year 1920. Presented by Hon. Mr. Speaker, April 18, 1921.
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14. Report of the work of the Department of Soldiers' Civil Re-establishment for year ended December 31, 1920. Presened by Hon. Mr. Tolmie, March 14, 1921.
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15. Report of the Minister of Agriculture for the Dominiin of Canada, for the year ending March 31, 1920. Presented by Hon. Mr. Tolmie, February 16, 1921.
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15b. Report of the Veterinary Director General for the years ending March 31, 1919, and March 31, 1920. Presented by Hon. Mr. Tolmie, April 4, 1921.
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16. Report of the Dominion Experimental Farms for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Tolmie, April 19, 1921.
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17. Census of Industry.—Municipal Statistics, 1919. Not presented.
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17a. Census of Industry.—Laths, Lumber, etc., 1918. Not presented.
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17b. Census of Industry.—Central Electric Stations, 1918. Not presented.
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18. Report of the Department of Immigration and Colonization, for the fiscal year ended March 31, 1920. Presented by Hon. Mr. Calder, April 7, 1921.
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19. Report of the Minister of Public Works on the works under his control for the fiscal year ended March 31, 1920. Presented by Hon. Mr. McCurdy, February 15, 1921.
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20. Annual Report of the Department of Railways and Canals, for the fiscal year from April 1, 1919, to March 31, 1920. Presented by Hon. Mr. Reid, March 9, 1921.
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21. Fifty-third Annual Report of the Department of Marine and Fisheries, for the year 1919-20—Marine. Presented by Hon. Mr. Ballantyne, February 15, 1921.
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22. List of Shipping, issued by the Department of Marine and Fisheries, being a list of vessels on the registry books of the Dominion of Canada, on the 31st December, 1920. Not presented.....*Printed for distribution and sessional papers.*

23. Supplement to the Fifty-third Annual Report of the Department of Marine and Fisheries for the fiscal year 1919-20 (Marine)—Steamboat Inspection Report. Not presented.
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25. Annual Report of the Department of the Interior, for the fiscal year ended March 31, 1920. Presented by Hon. Mr. Calder, March 1, 1921.
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25*a*. Annual Report of the Topographical Survey Branch, Department of the Interior, year 1919-20. Not presented.....*Printed for distribution and sessional papers.*

26. Summary Report of the Geological Survey, Department of Mines, for the calendar year 1920. Presented by Hon. Mr. Tolmie, May 4, 1921.
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26*a*. Summary Report of the Mines Branch of the Department of Mines, for the calendar year ending December 31, 1920. Presented by Hon. Mr. Calder, March 4, 1921.
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27. Annual Report of the Department of Indian Affairs for the year ended March 31, 1920. Presented by Hon. Mr. Calder, March 4, 1921.
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28. Report of the Royal Canadian Mounted Police for the year ended September 30, 1920. Presented by Hon. Mr. Calder, April 6, 1921.
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34. Report of the Secretary of State for External Affairs for the year ending March 31, 1920. Presented by Hon. Mr. Meighen, March 1, 1921.
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35. Report of the Superintendent of Penitentiaries for the fiscal year ended March 31, 1920. Presented by Hon. Mr. Doherty, April 13, 1921.
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36. Report of the Department of Militia and Defence, Canada, for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Guthrie, February 28, 1921.
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37. Report of the Department of Labour for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Meighen, March 18, 1921.
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38. Fourth Annual Report of the Editorial Committee on Government Publications, dated March 1, 1921. Presented by Sir George Foster, March 15, 1921.
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39. Report of the Department of the Naval Service for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Ballantyne, February 15, 1921.
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40. Fifty-third Annual Report of the Fisheries Branch of the Department of the Naval Service, 1919. Not presented.....*Printed for distribution and sessional papers.*

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42. Report of the Chief Electoral Officer, in conformity with Chapter 46, Section 19 of the Dominion Elections Act. Presented by Hon. Mr. Speaker, April 14, 1921.
Printed for distribution to Senators and Members.

42a. Copies of Orders in Council Nos. P.C. 1722 and P.C. 1860, approving two tariffs of fees of election officers under section 76 of the Dominion Elections Act. Presented by Sir Henry Drayton, February 22, 1921.
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43. Statement of Governor General's Warrants issued since the last Session of Parliament on account of 1920-21. Presented by Sir Henry Drayton, February 16, 1921.
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44. Statement of Expenditure on account of "Miscellaneous Unforeseen Expenses," from the 1st April, 1920, to the 15th February, 1921, in accordance with the Appropriation Act Number (1), 1920. Presented by Sir Henry Drayton, February 16, 1921.
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45. Statement of Temporary Loans issued by the Government of Canada since the last Session of Parliament still outstanding. Presented by Sir Henry Drayton, February 16, 1921.
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46. Statement of Receipts and Expenditures of the National Battlefields Commission to 31st March, 1920. Presented by Sir Henry Drayton, February 16, 1921.....*Not printed.*

47. Report of the Ottawa Improvement Commission for the fiscal year ended March 31, 1920. Presented by Sir Henry Drayton, February 16, 1921.....*Not printed.*

48. Statement in pursuance of Section 17 of the Civil Service Insurance Act, for the year ending March 31, 1920. Presented by Sir Henry Drayton, February 16, 1921.
Not printed.

49. Statement of the Receipts and Expenditures of the Royal Society of Canada, for the year ended April 30, 1920. Presented by Sir Henry Drayton, February 16, 1921.
Not printed.

CONTENTS OF VOLUME 9—*Continued.*

50. Detailed account of endorsements or liabilities under Chapter 70, 10-11 George V, 1920, respecting the Shipbuilding Industry. Presented by Hon. Mr. Tolmie, February 16, 1921 ..... *Not printed.*

51. Statement of Superannuation and Retiring Allowances in the Civil Service in the year ending 31st December, 1920, under Chap. 17, R.S.C., showing name, rank, salary, service allowance and cause of retirement of each person superannuated or retired, also whether the vacancy has been filled by promotion, or by appointment, and the salary of any new appointee. Presented by Sir Henry Drayton, February 17, 1921.
Not printed.

51*a*. Return to an Order of the House of the 4th April, 1921, for a return showing (*a*) the number of ex-civil servants now drawing superannuation from the Government and who had contributed for thirty-five years to the superannuation fund, and (*b*) the amount still remaining in this fund and (*c*) the amount withdrawn in the years 1918, 1919 and 1920. Presented April 8, 1921. Mr. Stevens ..... *Not printed.*

51*b*. First Annual Report of the Civil Service Commission on its operations under the Act respecting the Retirement of certain members of the Public Service, as required by Section 7 of Chapter 67, 10-11 George V. Presented by Hon. Mr. Calder, April 11, 1921.
Printed for bound sessional papers only.

52. Regulations for the Canadian Air Force, approved by the Governor in Council under Section 5 of the Air Board Act, 9-10, George V, Chapter 11, on the 31st day of August, 1920. Presented by Hon. Mr. Guthrie, February 28, 1921.....*Not printed.*

53. Financial Statement of the Honorary Advisory Council for Scientific and Industrial Research of Canada, for the year ending March 31, 1920. Presented by Sir George
Not printed.

54. Report of the Canadian Wheat Board, season of 1920. Presented by Sir George Foster, February 21, 1921.
Printed for sessional papers and distribution to Senators and Members.

55. Regulations under "The Destructive Insect and Pest Act," pursuant to Section 9, Chapter 31 of 9-10 Edward VII. Presented by Sir Henry Drayton, February 22, 1921.
Not printed.

56. Copy of Order in Council P.C. 2603, dated 26th October, 1920, appointing:—The Right Honourable Sir George Eulas Foster, a Member of His Majesty's Most Honourable Privy Council, G.C.M.G., B.A., D.C.L., LL.D., Minister of Trade and Commerce of Canada; The Right Honourable Charles Joseph Doherty, a Member of His Majesty's Most Honourable Privy Council, K.C., D.C.L., LL.D., Minister of Justice of Canada; and The Honourable Newton Wesley Rowell, a Member of the King's Privy Council for Canada, K.C.; to attend as the representatives of Canada at the first meeting of the Assembly of the League of Nations to be held at the Seat of the League in Geneva, Switzerland, on the 15th November, 1920. Presented by Sir George Foster, February 22, 1921.....*Not printed.*

56*a*. Copy of Resolutions adopted by the Assembly of the League of Nations during its First Session (November 15th to December 18th, 1920). Presented by Hon. Mr. Meighen, February 23, 1921 .....*Not Printed*

56*b*. Report by the Secretary-General to the First Assembly of the League of Nations on the work of the Council. Presented by Hon. Mr. Meighen, February 23, 1921.
Not printed.

57. Copy of General Rules and Orders of the Exchequer Court of Canada, in accordance with the provisions of Section 88 of the Exchequer Court Act, Chapter 140, R.S.C. 1906. Presented by Sir Henry Drayton, February 24, 1921. .....*Not printed.*

57*a*. Copy of further General Rules and Orders of the Exchequer Court of Canada, in accordance with the provisions of Section 88 of the Exchequer Court Act, Chapter 140, R.S.C. 1906. Presented by Sir Henry Drayton, May 9, 1921 .....*Not printed.*

58. General Rules and Forms in accordance with Section 66 of The Bankruptcy Act, Chapter 36, 9-10 George V. Presented by Sir Henry Drayton, February 24, 1921.
Not printed.

59. A detailed statement of all bonds or securities registered in the Department of the Secretary of State of Canada, since last return (27th February, 1920), submitted to the Parliament of Canada under Section 32 of Chapter 19, of the Revised Statutes of Canada. Presented by Sir Henry Drayton, February 25, 1921.
Not printed.

CONTENTS OF VOLUME 9—*Continued.*

60. Order in Council, P.C. 755, as amended by Order in Council P.C. 879 of April 14, 1920, establishing The Clearing Office and its duties with respect to the settlement of the properties or debts in Canada of German nationals, in pursuance of the provisions of Section 1 of "An Act for carrying into effect the Treaties of Peace between His Majesty and certain other Powers," Chapter 30, George V, 1919. Presented by Sir Henry Drayton, March 1, 1921. .....*Not printed.*

61. Statement showing the number of Enfranchisements under the Indian Act, from 1st April, 1920, to 18th February, 1921. Presented by Hon. Mr. Calder, March 1, 1921. *Not printed.*

62. Return of Orders in Council which have been published in the *Canada Gazette*, between 5th February, 1920, and the 31st December, 1920, in accordance with the provisions of Section 77 of "The Dominion Lands Act," Chapter 20, 7-8, Edward VII. The Senate.....*Not printed.*

63. Return of Orders in Council which have been published in the *Canada Gazette* between the 5th February, 1920, and the 31st December, 1920, in accordance with the provisions of Section 19, of Chapter 10, 1-2 George V.—"The Forest Reserves and Parks Act." The Senate.....*Not printed*

64. Copies of Orders in Council passed between the 5th February, 1920, and the 31st December, 1920, approving of regulations and forms prescribed in accordance with the provisions of Section 4, Chapter 18, 1917, "Migratory Birds Convention Act." The Senate. .....*Not printed.*

65. Copies of General Orders promulgated to the Militia for the period between February 2, 1920, and January 15, 1921. Presented by Hon. Mr. Guthrie, March 8, 1921. *Not printed.*

66. Copies of all Routine Orders of the Canadian Expeditionary Force promulgated from February 3, 1920, to September 30, 1920. Presented by Hon. Mr. Guthrie, March 8, 1921. ..... *Not printed.*

67. Additional Regulations made under authority of the Soldier Settlement Act of 1919. The Senate ..... *Not printed.*

68. Return showing all lands sold by the Canadian Pacific Railway Company during the year ended 30th September, 1920, together with the names of the purchasers, in accordance with the Statutes of Canada, 1886, Chapter 9, Section 8. Presented by Hon. Mr. Calder, March 4, 1921. .....*Not printed.*

69. Return showing the number of permits granted to take intoxicants into the North West Territories, for the year ended the 31st of December, 1920, in accordance with the provisions of the Revised Statutes, Chapter 62, Section 88. Presented by Hon. Mr. Calder, March 4, 1921. ..... *Not printed.*

70. Third Annual Report of the Historical Documents Publication Board for the year ending March 31, 1920. Presented by Hon. Mr. Calder, March 4, 1921. ....*Not printed.*

71. Copy of the Canada-West Indies Trade Agreement, 1920. Presented by Sir George Foster, March 7, 1921. ..... *Not printed.*

72. Return to an order of the House of the 5th May, 1920, for a copy of a letter sent on January 30, 1920, to the Right Honourable Sir George Foster, acting Prime Minister, by J. T. Ross, Esq., President of the Quebec Board of Trade, concerning the intention of the Government to build in Canada a number of 15,000-ton passenger steamships with a speed of 18 knots for the Canadian service, and a copy of the letter in answer thereto. Presented, March 7, 1921 Mr. Lapointe. ..... *Not printed*

73. Return to an Order of the House of the 26th May, 1920, for a Return showing the average prices paid for anthracite coal in Canada in the years 1914, 1915, 1916, 1917, 1918 and 1919. Presented, March 7, 1921. Mr. Archambault ..... *Not printed.*

74. Return to an Order of the House of the 17th May, 1920, for a Return showing:—

1. Working hours of the Civil Servants in the Inside Service, stenographers, clerks and others.

2. Whether these hours are strictly observed.

3. What salaries stenographers, clerks and others are receiving. That is, the average generally, also average bonus. Presented March 7, 1921. Mr. Hay. *Not printed.*

CONTENTS OF VOLUME 9—*Continued.*

75. Return to an Order of the House of the 17th May, 1920, for a copy of all letters, telegrams, reports, documents and other correspondence between the Post Office Department, the Post Office Inspector at Halifax, and any persons at Vogler's Cove, Nova Scotia, regarding complaints in connection with the manner in which post office matters are conducted at the said Vogler's Cove. Presented March 7, 1921. Mr. Duff. ..... *Not printed.*

76. Return to an Order of the House of the 26th May, 1920, for a copy of all telegrams, letters and other documents referring to the application for the change in the site of the Scotch Hill post office, Inverness County, N.S. Presented March 7, 1921. Mr. Chisholm ..... *Not printed.*

77. Return to an Order of the House of the 4th June, 1919, for a Return showing:—

1. The initial cost of the thirty-six drifters known as the "C.D.'s" referred to by the Honourable Minister of Naval Affairs on page 2916 of Unrevised *Hansard.*

2. How much was expended in repairing these vessels from date of purchase to November 11, 1918.

3. Who, on behalf of the Government, looked after the building of these vessels.

4. Who accepted these vessels from the builders.

5. Whether he is still in the service. Presented March 7, 1921. Mr. Sinclair, (Antigonish.) ..... *Not printed.*

78. Return to an Order of the House of the 5th May, 1920, for a copy of a letter of the Board of Trade of Quebec to the Minister of Marine and Fisheries, dated December 29, 1919, concerning the loss of the Government steamship *Canadian Recruit* and the accident to the Government steamer *Canadian Spinner* and other accidents due to want of ice breakers, and a copy of the letter in answer thereto. Presented March 7, 1921. Mr. Lapointe ..... *Not printed.*

79. Return to an Order of the House of the 3rd May, 1920, for a copy of the correspondence between the Department of Public Works and all the officers, employees or other persons concerning the redistribution of the districts in the Public Works Department. Presented March 7, 1921. Mr. Cannon ..... *Not printed.*

80. Return to an Order of the House of the 7th March, 1921, for a return showing: 1. Whether the Governor in Council has prohibited the export of gold coin, gold bullion or fine gold bars, from the Dominion of Canada, and if so, whether such prohibition is still in force, and under what authority, and how and when such prohibition was declared, made or published. 2. If the Governor in Council has prohibited the export of gold coin, gold bullion or fine gold bars from the Dominion of Canaada, whether such prohibition was absolute, or was such gold coin, gold bullion or fine gold bars, notwithstanding such prohibition as may have been made in respect thereof, still subject to export in certain cases, or by virtue of permits or licenses, secured for such purposes. 3. Whether the Governor in Council, or the Government of the Dominion of Canada, or any minister or official or officer thereof, has issued or granted permits or licenses permitting or authorizing the export of gold coin, gold bullion or fine gold bars from the Dominion of Canada, by any person, bank, company or corporation since the 1st of January, 1918; and if so, to what person or persons, bank or banks, company or companies, corporation or corporations such permits or licenses to export gold coin, gold bullion or fine gold bars were granted or issued since the 1st of January, 1918, and the respective dates of such permits or licenses. 4. To what person, bank, company or corporation each of such permits and licenses was issued or granted, and when, and what amounts of gold coin, gold bullion or fine gold bars were authorized to be exported by each of such permits and licenses; and amount of gold coin, gold bullion or fine gold bars actually exported under each of such permits and licenses. 5. Whether such permits or licenses as may have been issued for the export of gold coin, gold bullion or fine gold bars or the applications therefor specified to what country or countries the gold coin, gold bullion or fine gold bars, thereby authorized to be exported, were to be sent, and if so, what country or countries were so mentioned or specified in each of said permits or licenses, and in each application for such permits or licenses. 6. Whether any charge or charges have been made by the Governor in Council, by the Government of the Dominion of Canada or by any minister, official or officer thereof, for permits or licenses to export gold coin, gold bullion or fine gold bars from the Dominion of Canada, and if so, what charge or charges; and whether the charge or charges so made have depended to any extent, and if so, to what extent, upon the amount of gold coin, gold bullion or fine gold bars that the respective permits or licenses authorized to be exported. Presented March 7, 1921. Mr. Devlin.
Not printed.

CONTENTS OF VOLUME 9—*Continued.*

81. Copies of Order in Council, as follows:—P.C. 1849, dated 12th August, 1920: Age limits on entry of Petty Officers and Chief Petty Officers for special service—alteration of. P.C. 2137, dated 15th September 1920: Putting into effect of the Naval Discipline (Dominion Naval Forces) Act. P.C. 2328, dated 25th September, 1920: Establishment of "Naval Professor," R.C.N. P.C. 2709, dated 6th November, 1920: Prize Money for Gunnery and Torpedo Work. P.C. 2835, dated 19th November, 1920: Entry of Surgeon Lieutenant, R.C.N. P.C. 2678, dated 3rd December, 1920; Entry of Chief Petty Officers and Petty Officers in the Royal Canadian Navy. P.C. 2911, dated 3rd Decemher, 1920: Establishment of Non-Substantive Ratings in the R.C.N. P.C. 3037, dated 30th December, 1920: Allowance for Captain's Writer. P.C. 28, dated 21st January, 1921: Entry of Instructor Officers, R.C.N. P.C. 288, dated 7th February, 1921; Allowance for Officers appointed as District Intelligence Officers in lieu of a Specialist. P.C. 299, dated 7th February, 1921: Provision for special protective clothing for men engaged on submarine duty. P.C. 289, dated 14th February, 1921: Staff Pay to Headquarters Naval Staff. Presented by Hon. Mr. Ballantyne, March 8, 1921. ..... *Not printed.*

81*a*. R. C. Navy. P.C. 1642, May 18, 1921, respecting loan of volunteers from active list. Presented June 4, 1921. ..... *Not printed.*

82. Return to an Order of the House of the 29th March, 1920, for a copy of the specifications and plans for the drydock at Vancouver, British Columbia, for which a subsidy is being granted to J. Coughlan & Sons, Limited, along with a copy of the contract between the Government and J. Coughlan & Sons, Limited, for the construction of the said drydock. Presented March 8, 1921. Mr Archambault..*Not printed.*

82*a*. Return to an Order of the House of the 4th March, 1921, for a copy of the contract given by the Government of Canada to the firm of J. Coughlan & Sons for the construction of a dry dock in Vancouver, together with all the correspondence, tenders contract and all documents relating to the said contract. Presented April 28, 1921. Mr. Archambault ..... *Not printed.*

83. Return to an Order of the House of the 5th May, 1920, for the production of copies of all letters, telegrams, papers and correspondence exchanged between the Department of Justice and others as the case may be in reference to the trial of one Onofrio Montzano held at Murray Bay, district of Saguenay, in 1912, and the trial of the Labrie Brothers held at Sherbrooke, district of St. Francois, and their release from penitentiary on account of irregularities in the proceedings followed at each of these trials, and also copies of all documents contained in the records of the Department of Justice in reference thereto. Presented March 8, 1921. Mr. Casgrain. *Not printed.*

84. Appointments, Promotions and Retirements, Canadian Militia and Canadian Expeditionary Force, from February 5, 1920, to December 9, 1920. Presented by Hon. Mr. Guthrie, March 8, 1921 ..... *Not printed.*

85. Return to an Order of the Senate of the 23rd April, 1920, for a Return showing all moneys expended by the Government up to the present time in connection with the Treaty with Germany, Austria, Czecho-Slovakia, the Serb-Croatian-Slovene State and Bulgaria, stating the vote from which any moneys so far expended have supplied; stating the amount assessed against Canada under Article 6 of the Covenant of the League of Nations as the share of the Dominion of Canada for the purpose of carrying out the terms of the Covenant. The Senate.....*Not printed.*

86. Return to an Order of the Senate of the 28th May, 1920, for a Return of all plans and reports made by the engineers of the Public Works Department in connection with a survey made of the Saskatchewan aiver, to determine the possibiity of navigation from Lake Winnipeg to Edmonton. The Senate.....*Not printed.*

87. Return to an Order of the House of the 23rd June, 1920, for a copy of all correspondence, letters, telegrams and reports touching the issuing of permits for the export of sugar, whether with refineries or those acting for them or with purchasers or those acting for them. Presented March 10, 1921. Mr. McMaster. *Not printed.*

88. Return to an Order of the House of the 7th March, 1921, for a Return showing:—1. In what countries commercial agencies have been established by the Federal Government. 2. Names of said agents, their previous address, present address, previous business experience, date of appointment and respective salaries. Presented March 14, 1921. Mr. Duff. .....*Not printed.*

CONTENTS OF VOLUME 9—*Continued.*

89. Return to an Order of the House of the 14th March, 1921, for a Return showing: 1. Number of non-commissioned officers in the Dominion Police at the time of the amalgamation with the Mounted Police. 2. Number of said officers in "A" Division at the present time. 3. Whether it is true that all non-commissioned officers of the Dominion Pilice were placed junior on the Seniority List to non-commissioned officers in the Mounted Police irrespective of years of service; and whether it is further true that a Dominion Police Sergeant with 6 years' service as such, was, upon amalgamation, placed junior to a non-commissioned officer of the Mounted Police with only a few months' service as such. 4. At the time of the amalgamation of the two forces whether three inspectors of the Dominion Police were reduced to sergeants. If so, why. 5. Number of non-commissioned officers of the Mounted Police promoted to inspectors at the time or subsequent to, the date of the amalgamation. Presented March 14, 1921. Mr. Cahill.

Not printed.

89*a*. Return to an Order of the House of the 14th March, 1921, for a Return showing: 1. Cost of the Dominion Police Force during 1919, less the Finger Print and Ticket of Leave sections. 2. Strength of the Dominion Police at the time of their amalgamation with the Mounted Police. 3. Strength of "A" division at the present time, and if there has been an increase in numbers, what the necessity is for such increase. 4. Cost of "A" division for the first 12 months after the amalgamation with the Dominion Force, and if there was an increase in cost, what the reason is for such increase. 5. How many Government buildings, etc., were given police protection at the time the forces were amalgamated. 6. How many Government buildings are given police protection at the present time. Presented March 14, 1921. Mr. Cahill. ..... *Not printed.*

89*b*. Return to an Order of the House of the 14th March, 1921, for a Return showing: 1. Whether the members of the Royal Mounted Police receive a share of any fines imposed for infractions of any Dominiin Act or other Act. 2. If so, what proportion of such fines they receive. 3. Names of the members of the Royal Canadian Mounted Police who have been paid a share of such fines during the past twelve months and amount paid to each. Presented March 14, 1921. Mr. Cahill.

Not printed.

89*c*. Return to an Order of the House of the 14th March, 1921, for a Return showing: 1. Before their amalgamataion with the new Mounted Police Force number of trips per day made by the Dominion Police to the Departmental buildings in connection with the police mail. 2. Number of trips per day made for the same purpose by the members of the present Mounted Police Force. 3. Whether the Dominion Police performed the duties mentioned on foot. 4. Whether the Mounted Police perform the same duties on motor cycles, or by other vehicles. 5. Whether the services in question were performed for a period of about 30 years by the Dominion Police. 6. If so, why the number of trips per day has been decreased in the case of the Mounted Police. Presented March 14, 1921. Mr. Cahill.

Not printed.

89*d*. Return to an Order of the House of the 14th March, 1921, for a Return showing: 1. Names of the Staff Officers in the Royal Canadian Mounted Police according to seniority. 2. Whether they all draw staff pay. If so, how much each draws. 3. If all do not draw staff pay, names of those who receive it, and why an exception is made. 4. In addition to detectives, whether there are a superintendent and uniformed men in Montreal and Toronto. 5. If so, what the necessity is for maintaining these members of the Mounted Police in the cities mentioned. 6. In addition to salaries, whether the superintendents have their house rent paid, and whether they receive free coal, light, etc. 7. If so, whether the men are similarly treated, and if not, why. 8. Whether "N" Division of the Mounted Police is located at Ottawa. 9. If so, what duties other than drilling as cavalry "N" Division performs. 10. Whether it would not be in the best interest, and conducive to a large saving in public expenditure, if the Mounted Police were absorbed by the Royal Canadian Dragoons. 11. Whether there is any practical objection to their being so absorbed. If so, what the objection is. Presented March 14, 1921. Mr. Cahill.

Not printed.

89*e*. Return to an Order of the House of the 14th March, 1921, for a Return showing: 1. Whether it is true that one automobile sufficed for the purposes of the Dominion Police before ther amalgamation with the Mounted Police. 2. Whether it is correct that "A" Division of the Mounted Police have been using two automobiles, one motor truck and two motor cycles, and that five chauffeurs are employed, who do no other work than drive cars. 3. Whether any members of the Mounted Police have been imprisoned in the County of Carleton jail since the amalgamation with the Dominion Police. 4. If so, what the offence and sentence in each case was, and by whom the trial was held and sentence pronounced. 5. Whether

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the Government pay for the maintenance of such men as were imprisoned in the County of Carleton Jail, and if not, why not. 6. Whether there is at the present time in one of the buildings owned by the Government in the City of Ottawa a cell or place of detention in which members of the Mounted Police may be confined. If so, where it is located. 7. Whether any member of the Mounted Police has been confined in such cell or place of detention, and for what offence. 8. By whom the offender so confined was tried, and what sentence was pronounced. 9. Whether a superintendent of the Mounted Police fined two boys for breaking windows at the Ottawa Experimental Farm last summer. 10. If so, what the amount of the fines, and whether the superintendent paid over the money received for such fines, and if so, to whom payment was made. Presented March 14, 1921. Mr. Cahill.
Not printed.

90. Proceedings of the International Financial Conference held at Brussels in 1920: Volume I—Report of the Conference. Volume II—Verbatim Record of the Debates. Volume III—Statements on the financial Situation of the Countries represented at the Conference. Volume IV—Public Finance. Presented by Sir Henry Drayton, March 16, 1921. ..... *Not printed.*

91. Supplementary Report of a Committee of experts, dated January, 1921, appointed by Order in Council dated 20th November, 1918, on the recommendation of the Civil Service Commission, to investigate and report upon conditions in the Department of Public Printing and Stationery. Presented by Sir George Foster, March 17, 1921.
Not printed

92. Report by Arthur Young and Company, dated 6th December, 1920, respecting Reorganization of the Department of Public Printing and Stationery. Presented by Sir George Foster, March 17, 1921.....*Not printed.*

93. Detailed Statement of Remissions of Customs Duties and the Refund thereof, under Section 92, Consolidated Revenue and Audit Act, through the Department of Customs, for the fiscal year ended 31st March, 1920. Presented by Sir Henry Drayton, March 22, 1921. ..... *Not printed.*

94. Return to an Order of the House, of the 21st March, 1921, for a copy of all letters, telegrams and other correspondence between the Dominion Government or any member thereof and the Government of Ontario or any member thereof, regarding Bill No. 23 (Letter D of the Senate), intituled: "An Act respecting the Lake of the Woods Control Board," or the subject matter thereof. Presented March 22, 1921. Mr. Molloy. ..... *Not printed.*

94*a*. Further correspondence between the Government of Canada and the Provincial Governments of Manitoba and Ontario, respecting the control of the waters of the Lake of the Woods. Presented by Hon. Mr. Meighen, May 27, 1921.
Not printed.

94*b*. Copy of further telegrams between the Prime Minister of Canada and the Premier of Ontario respecting the control of the waters of the Lake of the Woods. Presented by Hon. Mr. Meighen, May 31, 1921. ..... *Not printed.*

95. Return to an Order of the House of March 9, 1921, for a copy of all letters, papers and other documents leading up to the passing of the Order in Council, dated the 6th day of September, 1919 (P.C. 1860), whereby authority was given (a) For the withdrawal from disposal, under the provisions of the Quartz Mining Regulations, of the available Sodium Chlorid (common salt) Rights in Township 88, Ranges 7 and 8, and Township 89, Ranges 8 and 9, West of the 4th, to admit of prospecting operations for the discovery of that mineral being conducted in the interests of the Province of Alberta. (b) For the withdrawal from disposal of the Gypsum Mining Rights under the said property. Presented March 23, 1921. Mr. Mackie (Edmonton).
Not printed.

96. Return to an Order of the House of the 8th March, 1921, for a copy (a) of the report made by Mr. S. C. Ells, an officer of the Department of Mines, to the Department of the Interior, touching the Tar Sands in the Province of Alberta, as related in an Order in Council, P.C. 1495, and dated the 3rd day of July, 1920; (b) of all letters, papers and documents of whatsoever nature they may be, leading up to the passing of the said Order in Council. Presented March 23, 1921. Mr. Mackie (Edmonton).
Not printed.

97. Return to an Order of the House of the 23rd March, 1921, for a Return showing: 1. Who are the medical officers employed at the head office of the Board of Pension Commissioners at Ottawa. 2. Their names and the medical experience of each. 3. How many of these medical advisers have completed their uni-

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versity course, and (a) Their names; (b) How many have obtained their diplomas permitting them to practice; (c) Whether any among them have obtained their license to practice in recognition of their war service. 4. The military record of each of these officers. 5. The salary of each. 6. Their respective duties. 7. Whether these medical advisers have the medical experience sufficient to decide on technical questions for the Board of Pension Commissioners and whether they are well qualified to change the decision of local medical officers. 8. Whether the Commissioners are obliged to concur in the decision of their medical officers. 9. If not, why. Presented March 23, 1921. Mr. Cannon.....*Not printed.*

98. Copy of Trade Agreement between France and Canada, signed at Paris, the 29th day of January, 1921. Presented by Hon. Mr. Meighen, March 29, 1921.
Printed for distribution to Senators and Members.

98*a*. Correspondence relating to the Franco-Canadian Commercial Agreement, 1921. Presented by Sir George Foster, April 15, 1921.
Not printed.

99. Return to an Order of the House of the 16th March, 1921, for a Return showing: 1. The names of the employees of the Money-Order Branch in the following Post Offices (Head Offices): Hamilton, London, Ottawa, Montreal, Quebec, St. John, N.B., and Halifax, N.S. 2. The rank, according to the new classification, of each one of said employees, and their present salary. 3. The number of years of service of said employees. 4. The annual actual revenue of each one of the above mentioned Post Offices. 5. Who the employees are in charge of said Branch in each one of said offices. 6. Who the officials are in charge of the registration Branch ian the main post offices of the above mentioned cities, the rank and salary of each one of them. Presented March 29, 1921. Mr. Parent.....*Not printed.*

100. Return to an Order of the Senate of the 29th March, 1921, for a Return showing: 1. When the Griffenhagen Company was engaged to reorganize the various departments of the Government services. 2. How much has been paid to them up to December 31, 1920—(a) for salary, (b) for travelling expenses, and (c) for maintenance. 3. What members of the Civil Service have been assisting the Griffenhagen Company. What amount has been paid them while engaged in this work—(a) for salary, (b) for travelling expenses, (c) for maintenance. 4. What amount, if any, is due and unpaid to Griffenhagen Company, and the officials assisting them up to December 31, 1920. 5. Whether the contract with Griffenhagen Company has been cancelled. 6. If not, is it going to be cancelled, and when. 7. What departments have they reorganized. 8. Has their work been as unsatisfactory as the work of their predecessors, Messrs. Young and Company. The Senate.
Not printed.

101. Return to an Order of the Senate of the 29th March, 1921, for a Return showing: All papers, documents and correspondence passed between the Canadian Government and the British Government, or between any Minister, member or official of the Canadian Government and any member or official of the British Admiralty or between any persons or officials thereof, since 1909, giving details and particulars as regards the negotiations on naval affairs leading up to the agreement which was arrived at after the Imperial Conference of 1911, as to the movement of vessels outside the three-mile limit and the establishment of naval stations for the ships transferred to or purchased for the Canadian Naval Service; also, copies of regulations governing the movement of vessels of the Canadian Navy at the present time. The Senate ..... *Not printed.*

102. Copy of Order in Council, P.C. 856, dated 21st March, 1921, placing the control and supervision of the Office of the High Commissioner for Canada in London under the Secretary of State for External Affairs. Presented by Hon. Mr. Meighen, March 30, 1921. ..... *Not printed.*

103. Return to an Order of the House of the 4th March, 1921, for a Return showing:—1. Who were Deputy Ministers in the several departments of the Government, on January 1, 1910. 2. Who were they, on January 1, 1921. 3. Who were heads of branches in the various departments of the Dominion Government in 1910. 4. Who were they on the 1st of January, 1921. Presented March 30, 1921. Mr. Vien.
Not printed.

104. Return to an Order of the House of the 7th March, 1921, for a Return showing:—1. Total number of employees in the Civil Service in the year 1913. 2. Total number of employees in the Civil Service in the year 1920. Presented March 30, 1921. Mr. McGibbon .....*Not printed*

CONTENTS OF VOLUME 9—*Continued.*

105. Return to an Order of the House of the 4th March, 1921, for a Return showing:— 1. How many commissions the Government has created since 1911. 2. Names of the said commissions. 3. Names of the present commissioners in the various commissions and their respective salaries. Presented March 30, 1921. Mr. Desiauriers. *Not printed.*

106. Return to an Order of the House of the 30th March, 1921, for a Return showing: 1. When the 18,000 box cars ordered for the Canadian National Railways were ordered. 2. If ordered at different dates, what year and month the orders were placed. 3. Names of firms building same. 4. Whether tenders were called or are they being built on order. 5. If built on basis of cost plus percentage, what percentage or profit is allowed. 6. Cost of 1,000 box cars. 7. How many cars have been delivered, and on what dates. 8. How many new cars were put in grain carrying trade west of Fort William. 9. Maximum grain carrying capacity of said cars. 10. Whether the said cars are fitted with hopper bottoms for speedy unloading at terminals. 11. Whether the 18,000 box cars above mentioned are in addition to cars which were added to replace broken or worn out box cars. Presented March 30, 1921. Mr. Reid (Mackenzie). ..... *Not printed.*

107. Return to an Address to His Excellency the Governor General, of the 10th March, 1921, for a copy of the Order in Council of July 9, 1920, appointing the Honourable Sir Thomas White as an arbitrator to value the stock of the Grand Trunk Railway Company, any subsequent Orders in Council having reference to this matter, and for all correspondence between the Government and the Honourable Sir Thomas White respecting such appointment. Presented April 4, 1921.....*Not printed.*

108. Copy of Orders in Council P.C., 279, dated 5th February, 1921, and P.C. 998, dated 23rd March, 1921, in respect to the appointment and salary of a manager for the Parliamentary Restaurant. Presented by Hon. The Speaker, April 4, 1921. *Not printed.*

109. Return to an Order of the House of the 23rd March, 1921, for a copy of all letters and correspondence exchanged between professors or officials of Acadia University and the Department of Mines, since February 1, 1920, to date, relative to the employment of students of the said University by the said Department during the summer months. Presented April 5, 1921. Mr. Douglas (Cape Breton).....*Not printed*

110. Return to an Order of the House of the 8th March, 1921, for a copy of all letters, papers, documents and agreements leading up to the passing of the Order in Council, dated the 8th day of July, 1920 (P.C. 1547), whereby General William Bethune Lindsay, M.I.E.C., secured the right to a nineteen hundred and twenty acre lease of Tar Sands in the Province of Alberta. Presented April 5, 1921. Mr. Mackie (Edmonton) ..... *Not printed.*

111. Return to an Order of the House of the 10th March, 1921, for a copy of all correspondence, reports and memoranda in the hands of the Civil Service Commission of Canada regarding the dismissal of Alfred St. Laurent from the stationery branch of the Department of Public Printing and Stationery at Ottawa. Presented April 5, 1921, Mr. Fripp. ..... *Not printed.*

112. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Drummond-Arthabaska. 2. Average price paid for the said farms. 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented April 5, 1921. Mr. Tobin.....*Not printed*

113. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Shefford. 2. Average price paid for the said farms. 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented, April 5, 1921. Mr. Tobin ..... *Not printed.*

114. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Richmond and Wolfe. 2. Average price paid for the said farms. 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented April 5, 1921. Mr. Tobin. ..... *Not printed.*

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115. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Compton. 2. Average price paid for the said farms. 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented April 5, 1921. Mr. Tobin. ..... *Not printed.*

116. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Brome. 2. Average price paid for the said farms. 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented April 5, 1921. Mr. Tobin..... *Not printed*

117. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Missisquoi. 2. Average price paid for the said farms. 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented, April 5, 1921. Mr. Tobin ..... *Not printed.*

118. Return to an Order of the House of the 14th March, 1921, for a Return showing:— 1. How many returned soldiers have purchased farms through the Soldiers' Settlement Board in the County of Stanstead. 2. Average price paid for the said farms 3. Whether any of the said farms have been abandoned. 4. If so, what disposition the Government has made of the said farms. 5. Whether any loss has been incurred. If so, what the net loss has been to the Government in connection therewith. Presented, April 5, 1921. Mr. Tobin. ..... *Not printed.*

119. Return to an Order of the House of the 7th April, 1920, for a Return showing:— 1. What blue-books were published in 1919. 2. What public documents were published in both languages in 1919. 3. What public documents were published in one language only, and in what language they were published. Presented April 5, 1921. Mr. Demers ..... *Not printed.*

120. Return to an Order of the House of the 23rd March, 1921, for a Return showing:— 1. The number of cars, locomotives and rolling stock generally, ordered by the Government during the calendar years 1918, 1919 and 1920. 2. The value of these orders. 3. From whom this equipment was purchased, and the value of each contract. Presented April 5, 1921. Mr. Wright .....*Not printed.*

121. Copy of correspondence between the Government of Canada and the Grand Trunk Railway Company relative to the question of the extension of time for Arbitration proceedings, and matters incident thereto, to date of April 3, 1921. Presented by Hon. Mr. Meighen, April 6, 1921. ..... *Not printed.*

121*a*. Subsequent Correspondence between the Government of Canada and the Grand Trunk Railway Company relating to the Arbitration proceedings, and copy of draft agreement in connection therewith. Presented by Hon. Mr. Meighen, May 21, 1921. *Not printed.*

122. Return to an Order of the House of the 14th March 1921, for a Return showing:— 1. Total number of pounds of butter exported outside of Canada, year by year, since 1910. 2. Value, year by year, of the exportation since 1910. 3. Total number of pounds of cheese exported outside of Canada, year by year, since 1910. 4. Value, year by year, of such exportation since 1910. 5. To what countries our cheese and butter were exported, year by year, during said years, specifying the amount and value of each. 6. Quantities of butter imported from various countries since 1910. 7. From what countries and what amount from each of them. 8. Quantities of cheese imported from the various countries since 1910. 9. From what countries and what amount from each of them. 10. Under what brands or names our cheese and butter are sold abroad. 11. Brands or names of butter and cheese we import from abroad. 12. Quantity in pounds of margarine and its value in cash, or any other substitute to butter, manufactured in the country since 1916, year by year. 13. Quantity in pounds and value of such substitutes imported into Canada, year by year, since 1916. 14. Whether the inobservance of the law regarding the process of manufacture and the sale of such substitutes, produced in Canada or purchased abroad, has been the object of several actions. 15. If so, the number of same. Presented, April 6, 1921. Mr. Boyer. ..... *Not printed.*

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123. Return to an Order of the House of the 4th March, 1921, for a Return showing:—
1. Number of bonded liquor warehouse licenses granted to the Province of Alberta by the present Government since 1917. 2. To whom such licenses were granted. 3. On whose recommendation. Presented April 6, 1921. Mr. Mackie (Edmonton). *Not printed.*

124. Return to an Order of the House of the 7th March, 1921, for a Return showing:—
1. Number of bushels of Canadian grain carried from Winnipeg eastwards during 1919 and 1920. 2. Quantity of Canadian grown grain exported abroad and shipped through Canadian ports, from what ports and what quantity in each case, during 1919 and 1920. 3. Quantity of Canadian grown grain exported through American ports during 1919 and 1920, from what ports and what quantity through each port. 4. Quantity of Canadian grown grain carried from the West to the East during 1919 and 1920—(*a*) by the C.P.R. (*b*) by the G.T.R. (*c*) by the Government Railways. 5. Rate now prevailing on the transportation of grain in Canada (*a*) on the Government Railways, (*b*) on the various other railways. Presented April 6, 1921. Mr. Vien ..... *Not printed.*

125. Return to an Order of the House of the 22nd March, 1920, for a Return showing:—
1. What the different classes of the Grand Trunk Railway Company's Stock were quoted at in January, 1918, as regards, First Preference Stock five per cent; Second Preference Stock five per cent; Third Preference Stock four per cent; Ordinary or Common Stock: Five per cent Grand Trunk Debenture Stocks; Five per cent Great Western Debenture Stocks; Four per cent Grand Trunk Debenture Stocks; Four per cent Northern Debenture Stocks. 2. What the same stocks were quoted at in January, 1919, and January, 1920. 3. Whether any of the stock of the Grand Trunk Railway Company has been sold or changed hands since January, 1918. 4. If so, who the purchasers of it were, what the date of purchase or transfer, and the price paid. 5. Whether any member of the present Government ever held any of the stock of the Grand Trunk Railway Company, either personally or by proxy through any other person. 6. If so, the names of said members, what amount of stock was so acquired, on what date and on what terms. Presented April 7, 1921. Mr. Caldwell. *Not printed.*

126. Return to an Order of the House of the 17th March, 1921, for a Return showing:—
1. Whether suction dredge *Tornado* was employed in dredging in Courtney Bay or St. John Harbour, N.B., during the year 1920. 2. Who is the owner. 3. Where the dredge was built. 4. What date she arrived at St. John. 5. What port she sailed from. 6. What the total expenditure was to December 31, 1920, in connection with the work done by this dredge. 7. Whether certain pontoons were lost at the time that said dredge was brought to St. John. 8. If the same were recovered. 9. Where the dredge *Tornado* is now. Presented April 7, 1921. Mr. Sinclair (Antigonish and Guysboro') ..... *Not printed.*

127. Return to an Order of the House of the 30th March, 1921, for a Return showing:—
1. Amount of money expended by the Dominion Government in each Province in the Dominion, for road building purposes during the year 1920. 2. Amount of money expended by the Dominion Government, in each Province, for Technical Education under the Agricultural Instruction Act in the year 1920. 3. Amount of money expended by the Dominion Government to assist agricultural fairs held in each Province in 1920. 4. Amount of money expended by the Dominion Government in the year 1920 in the various Provinces in operating a selling organization for the purpose of disposing of live stock, etc. 5. Total amount expended by the Dominion Government in 1920 towards assisting and developing agriculture. 6. Total amount expended in the year 1911 by the Dominion Government towards assisting and developing agriculture. 7. Amount of money expended by the Dominion Government in the year 1920 in connection with the Housing Act in the respective Provinces. Presented April 8, 1921. Mr. Armstrong (Lambton) ..... *Not printed*

128. Return to an Order of the House of the 14th March, 1921, for a copy of all correspondence, telegrams, and other documents, relative to the resignation of Mr. John Sheridan, Indian Superintendent for the North Shore district, in the Province of New Brunswick, in 1920. Also copy of all correspondence, telegrams and other documents relative to his reappointment to the said position. Presented April 8, 1921. Mr. Leger ..... *Not printed*

129. Return to an Order of the House of the 17th March, 1921, for a Return showing:—
1. What amounts were appropriated for the National Gallery of Canada from April 1, 1916, to April 1, 1921. 2. How these appropriations were expended. 3. Who is in charge of the National Gallery, when appointed, at what salary and present salary.

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4. How many officials are on the staff at the Gallery, their names, dates of appointment and respective salaries. 5. What officials of the Gallery staff have been drawing their salaries while the Gallery has been closed and at what work they were employed. 6. When and why the National Gallery was closed, and when it will be reopened. Presented April 11, 1921. Mr. Edwards.....*Not printed*

130. Return to an Order of the House of the 5th May, 1920, for a Return showing:—1. Totals of credits advanced by the Canadian Government to (*a*) Great Britain, (*b*) the Allied Powers, before the armistice. 2. Of these totals what proportions were used respectively for the purchase of (*a*) agricultural products; (*b*) manufactured goods. 3. Total of credits advanced by the Canadian Government to (*a*) Great Britain, (*b*) the Allied Powers, after the armistice. 4. Of these totals what proportions were used respectively for the purchase of (*a*) agricultural products; (*b*) manufactured goods. Presented April 11, 1921. Mr. Reid (Mackenzie).....*Not printed*

131. Return to an Order of the House of the 4th April, 1921, for a copy of all reports, orders, telegrams, certificates of valuation, or any other correspondence relating to or connected with the slaughter of 245 hogs, the property of one George B. Alderson, by officers of the Department of Agriculture on or about the 20th day of April, 1920, and for which compensation has been refused by the Minister. Presented April 11, 1921. Mr. Sutherland.....*Not printed*

131*a*. Copy of Report of Inspector made under the Animal Contagious Diseases Act, 1903, R.S.C. 1906, *re* slaughter of hogs owned by George Alderson, Humber Bay, Ont. Presented May 21, 1921. Mr. Sutherland.....*Not printed*

132. Copies of Orders in Council, P.C. 2010 and 2039, establishing regulations under the provisions of the Proprietary or Patent Medicine Act. Presented by Hon. Mr. Calder, April 14, 1921 .....*Not printed*

133. Return to an Order of the House of the 7th April, 1921, for a Return showing:—1. How many employees the Government has in the British Isles. 2. Number of departments maintained. 3. How many employees the Government has in the United States. 4. Number of departments maintained Presented April 13, 1921. Mr Wright.
Not printed.

134. Return to an Order of the House of the 7th March, 1921, for a Return showing:—1. In regard to the Federal Civil Service what is understood to be comprised by the words (*a*) Inside Service; (*b*) Outside Service. 2. Number of employees at present in the (*a*) Inside Service; (*b*) Outside Service. Presented April 14, 1921. Mr. Edwards .....*Not printed.*

135. Return to an Order of the House of the 7th April, 1921, for a Return showing:—1. Total number of persons in the employ of the Dominion Government, including both the inside and outside service, but not including the Canadian National Railways. 2. Number of persons in the employ of the Canadian National Railways Presented April 15, 1921. Mr. Reid (Mackenzie.).....*Not printed.*

136. Return to an humble Address of the Senate to His Excellency the Governor General, dated March 30, 1921, of:—All correspondence exchanged between the Imperial Government and the Government of Canada in connection with the representation of this country, either in the British Parliament or in any council; its participation in the administratiaon of the British Empire, its contribution to the wars of the Empire and to the establishment of a British or Canadian Navy. The Senate....*Not printed.*

137. Report of the Air Board, for the year 1920. The Senate.....*Not printed.*

138. Copy of Proceedings of the Canada-West Indies Conference, 1920. Presented by Sir George Foster, April 18, 1921.....*Not printed.*

139. Return to an Order of the House of the 6th April, 1921, for a Return showing:—1. Whether the Young Men's Christian Association associated with the Canadian Expeditionary Force in the great war submitted to the Government a statement of accounts showing all moneys received and expended by that body both by way of contribution from people in Canada and arising out of sales to Canadian troops. 2. If so, whether the Government will lay same upon the table of the House. 3. If not, whether it is the intention of the Government to procure and distribute such a statement. Presented April 18, 1921. Mr. Griesbach.....*Not printed.*

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140. Return to an Order of the House of the 9th March, 1921, for a Return showing:—1. Number of Soldiers' Hospitals in Canada at present. 2. Number of patients in each hospital. 3. What staff each hospital carries. 4. Total expenditure on these Military Hospitals. 5. Whether any of the said hospitals have been closed recently. 6. Number of soldier patients transferred from military to general or civic hospitals throughout the country. 7. Staff maintained at Ottawa for the inspection and general direction of these Military Hospitals. 8. Names and respective salaries of the members of said staff. 9. Whether any efforts have been made to save money by having soldier patients attended by local doctors. Presented April 18, 1921. Mr. Proulx. *Not printed.*

141. Return to an Order of the House of the 4th April, 1921, for a copy of the special papers and correspondence concerning the application to the Board of Pension Commissioners of Mrs. Brunelle, widowed mother of the late Sergeant Major N. Brunelle, No. 62068, for a pension. Presented April 18, 1921. Mr. Lemieux.....*Not printed.*

142. Return to an Order of the House of the 8th March, 1921, for a copy of all correspondence in connection with the employment and resignation of M. Abel Guibeau, engineer on board the *Canadian Traveller*, in 1919, and on the *Canadian Sower* in 1919-1920. Presented April 18, 1921. Mr. Rinfret.....*Not printed.*

143. Copy of Order in Council, P.C. 1270, dated 12th April, 1921, appointing the Honourable James Duncan Hyndman, Judge of the Supreme Court of Alberta, William D. Staples, Fort William, Ont., J. H. Haslam, Regina, Sask., and Lincoln Goldie, Guelph, Ont., commissioners to inquire into and report upon the subject of handling and marketing of grain in Canada. Presented by Sir George Foster, April 19, 1921.....*Not printed*

144. Reports of Ministers of Justice, approved by the Governor in Council, upon Provincial Legislation from 1896 to date. Presented by Hon. Mr. Doherty, April 21, 1921. *Printed for distribution, in bound form.*

145. Return to an Order of the House of the 26th April, 1920, for the production of copies of all correspondence, reports and documents exchanged between the Government and those in charge of the shipyard at Sorel, or any other person, in relation to the payment of a bonus to the employees of said shipyard, and the interruption or cessation of same. Presented April 21, 1921. Mr. Cardin.....*Not printed.*

146. Return to an Order of the House of the 13th April, 1921, for a Return showing:—1. Whether the Government operated a telegraph line in Northern British Columbia prior to the taking over of the Great North Western Telegraph Company's line in connection with the Grand Trunk Pacific Railway and Canadian Northern Railway. 2. Whether the Government is still operating both telegraph lines, namely, the old Government line and the Great North Western Telegraph line. 3. Why the Government is continuing to operate two telegraph offices in Hazelton, New Hamilton, Smithers, Telkwa and some other points along the Grand Trunk Pacific. 4. Whether the business warrants the maintaining of two separate telegraph offices in the towns mentioned. Presented April 21, 1921. Mr. Reid (Mackenzie.).....*Not printed.*

147. Return to an Order of the House of the 11th April, 1921, for a copy of telegrams, correspondence, petitions or other documents exchanged between the Government of Prince Edward Island and the Federal Government relative to the taking over and operating of the Dalton Sanatorium by the Federal Government and the handing back of the same to the Government of Prince Edward Island. Presented April 21, 1921. Mr. Sinclair (Queen's, P.E.I.).....*Not printed.*

148. Return to an Order of the House of the 21st April, 1921, for a Return showing:—1. Number of persons per mile of railway in operation in Canada in 1896, 1911 and 1914. 2. Number of persons per mile of railway in operation in each of the nine provinces (Alberta and Saskatchewan as now bounded), giving the mileage in each of the provinces in 1896, 1911 and 1914. Presented April 21, 1921. Mr. Casgrain. *Not printed.*

149. Return to an Order of the House of the 21st April, 1921, for a Return showing:—Names, occupation and residence of the persons who have applied for the position of superintendent of the Government shipyards at Sorel. Presented April 21, 1921. Mr. Cardin .....*Not printed.*

150. Copies of Orders in Council P.C. 2483, dated 23rd October, 1920, and P.C. 2652, dated 1st November, 1920, in respect to changes in the organizataion of the Law Branch of the House. Presented by Hon. The Speaker, April 22, 1921.....*Not printed.*

151. Return to an Order of the House of the 30th March, 1921, for a statement showing the names of the examining officials of the Customs Department, Toronto, and the respective salaries of each of said officials. Presented April 25, 1921. Mr. Archambault. *Not printed.*

CONTENTS OF VOLUME 9—*Continued.*

152. Sixth Annual Report of the Board of Directors of the Canadian Northern Railway System, for the year ended December 31, 1920. Presented by Hon. Mr. Reid, April 26, 1921.....*Not printed.*

153. Return to an Order of the Senate of the 26th April, 1921, for an Order showing:—The amount actually paid or due for wages for the first 20 of the most highly paid men on the Canadian National Railways in the following classes:—(1) engineers; (2) firemen; (3) trainmen; (4) local firemen; (5) yard foremen; (6) yard helpers. Give the amount per month in each case starting from July 1, 1920, up to January 1, 1921, and the total for the six months in each case. The Senate.....*Not printed.*

154. Return to an Order of the House of the 4th April, 1921, for a copy of all correspondence between the Government and the Board of Trade and City Council and Harbour Commission of Quebec, since the session of 1917, with regard to the diversion of the Northwestern grain trade to New York, the alleged non-fulfilment by the Government of its undertakings with regard to the terminals of the Transcontinental Railway at Quebec, and of the Memorials addressed to the Prime Minister on these subjects. Presented April 27, 1921. Mr. Lavigueur.....*Not printed.*

154*a*. Supplementary Return to an Order of the House of the 4th April, 1921, for a copy of all correspondence between the Government and the Board of Trade and City Council and Harbour Commission of Quebec, since the session of 1917, with regard to the diversion of the Northwestern grain trade to New York, the alleged non-fulfilment by the Government of its undertakings with regard to the terminals of the Transcontinental Railway at Quebec, and of the Memorials addressed to the Prime Minister on these subjects. Presented May 18, 1921. Mr. Lavigueur.....*Not printed.*

155. Return to an Order of the House of the 25th April, 1921, for a Return showing the number of returned soldiers who have purchased farms through the Soldiers' Settlement Board in the County of Bonaventure, the average price paid for said farms, the number of said farms which have been abandoned and the disposition made by the Government of the said farms, the loss incurred, if any, and the names of the soldiers who have settled in the said county, showing the respective localities. Presented April 28, 1921. Mr. Marcil (Bonaventure.).....*Not printed.*

156. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Finance Department in Ottawa. 2. Their names and salaries. Presented April 28, 1921. Mr. Hocken.....*Not printed.*

157. Return to an Order of the House of the 11th April, 1921, for a Return showing:—1. Number of officials now employed by the Canadian National Railway system in the traffic and operating departments. 2. Number of officials employed by the Canadian Northern Railway in the traffic and operating departments prior to the Government taking over the system. 3. Number of officials employed by the Grand Trunk Pacific Railway in the traffic and operating departments prior to the Government taking over the system. 4. Number of officials employed by the Canadian Government Railways, namely, the Intercolonial and Transcontinental, in the traffic and operating departments prior to the amalgamation of the companies into the Canadian National system. 5. Total cost in connection with wrecks on the Canadian National Railway on the line between Saskatoon and Calgary for the year 1920. 6. Whether the cost of wrecks was charged up to operating expenses or to capital account. 7. Total detention expenses on the Canadian National Railway between Saskatoon and Calgary for the year 1920. 8. Why it is that certain equipment for the Canadian National Railway is charged to operation expenses in stead of capital account. 9. Total amount charged to capital account for the year 1920 in connection with Canadian National Railways. Presented April 28, 1921. Mr. Myers.....*Not printed.*

158. Copy of Order in Council P.C. 118/1361, dated 20th April, 1921, respecting the retirement of James W. Watson of the Department of the Naval Service. Presented by Hon. Mr. Ballantyne, May 3, 1921.....*Not printed.*

159. Return to an Order of the House of the 11th April, 1921, for a copy of all correspondence since January 1, 1912, between the Minister of Railways and Canals or any officer of the Department of Railways and Canals at Ottawa, and any officer of the Intercolonial Railway, and between any of such officers and Messrs. G. J. Davie and Sons, or any solicitor or agent of the firm, respecting the expropriation of land at Lévis, Quebec, for the purposes of the Intercolonial Railway. Presented May 3, 1921. Mr. Fielding.....*Not printed.*

160. Return to an Order of the House of the 18th April, 1921, for a copy of all correspondence, telegrams and other documents exchanged between the Department of Justice and the Department of the Attorney General in the province of Alberta, in regard to the vacancy in the District Court Judgeship occasioned by the transfer of Judge McNeil to the Judicial District of Calgary. Presented May 3, 1921. Mr. Shaw. *Not printed.*

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161. Return to an Order of the House of the 7th March, 1921, for a Return showing:—1. Total number of enlistments in the Canadian Expeditionary Force (including men who enlisted under the Military Service Act) from the outbreak of the war to Armistice day. 2. Number of the said men who served in (*a*) Canada; (*b*) England, and (c) France. 3. The total number of examinations of pensioners conducted by the Board of Pension Commissioners from June, 1920, to date. 4. Number of reductions in pensions made and the total amount thereof. 5. Cost of the administration of the Board of Pension Commissioners for the whole period of the Board's existence. 6. Number of employees (a) male, and (b) female, employed by the said Board, and number of the male employees who saw service in France. 7. Number of men employed in the Department of Soldiers' Civil Re-establishment who saw service in France, and the total cost of administration of this department to date. 8. Number of men in the service of the Soldiers' Settlement Board and the Vocational Training Board, and what number of them saw service in France. Presented May 3, 1921. Mr. Gordon ..... *Not printed.*

162 Report of the Royal Commission appointed under Part I of the Inquiries Act, by Order in Council of May 20, 1919, to inquire into and concerning the possibilities of the Reindeer and Musk-Ox industries in the Arctic and sub-Arctic regions of Canada. Presented by Hon. Mr. Meighen, May 4, 1921 ..... *Not printed.*

163. Return to an Order of the House of the 16th March, 1921, for a copy of all correspondence, documents, telegrams, reports, memoranda, tenders and contracts having reference to or in connection with the repairs of the wharf situated at St. Michel, County of Bellechasse, Quebec, from October 1, 1918, to date. Presented May 7, 1921. Mr. Fournier..... *Not printed.*

164. Return to an Address to His Excellency the Governor General of the 11th April, 1921, for a copy of all correspondence, telegrams, petitions and other documents exchanged between the Dominion Government and the Ontario Provincial Government or any Ministers of either Administration, relative to the removal of the British Embargo on Canadian cattle. Presented May 9, 1921. Mr. Smith..... *Not printed.*

165. Return to an Address to His Excellency the Governor General, of the 11th April, 1921, for a copy of all correspondence between the Chief Justice of Ontario and any Member of the Government as to the Judges' Act of the Session of 1920. Presented May 9, 1921. Mr. Lemieux..... *Not printed.*

166. Return to an Order of the House of the 2nd May, 1921, for a Return showing (*a*) the number of officials transferred from Calgary, Winnipeg, Ottawa, Halifax, or other points in Canada to Vancouver (Soldiers' Civil Re-establishment Department) since November 1, 1920. (*b*) Whether said transferees are married or single. (*c*) Number of officials in Vancouver whose services have been dispensed with since November 1, 1920 (Soldiers' Civil Re-establishment Department), also number to whom notice of retirement has been given. (*d*) Names of those transferred into Vancouver and positions to which they were assigned. Presented May 9, 1921. Mr. Stevens. *Not printed.*

167. Return to an Order of the House of the 14th March, 1921, for a copy of all official correspondence between the Government of Canada or any Member thereof, and the Government of the Province of Manitoba, or any member thereof, respecting subsection 5, of clause 325 of the Consolidated Railway Act of Canada. Presented May 9, 1921. Mr. Cahill..... *Not printed.*

168. Copy of Supplementary Extradition Convention with the United States, signed at London on the 15th January, 1917. Presented by Hon. Mr. Doherty, May 11, 1921. *Not printed.*

168*a*. Copy of a Convention between the United States and Great Britain, signed January 15, 1917, making the wilful desertion of wife or children in the United States and Canada an extraditable offence. Presented by Hon. Mr. Doherty, May 21, 1921. *Not printed.*

169. Return to an Order of the House of the 21st March, 1921, for a copy of all correspondence, telegrams, reports, memoranda in the hands of the Minister of Public Works, Officials of the Public Works, Superintendent of Engineering Department, in and for the Province of Quebec, Mr. A. R. Decarie, and Engineering Department at Ottawa pertaining to and regarding the construction, repairs or improvements at the following named harbours: St. Ulric, Matane, Ste. Felicite, Ruisseau à Loutre, Méchins, all in Matane County, from January, 1918, to date. Presented May 12, 1921. Mr. Pelletier..... *Not printed.*

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170. Return to an Order of the House of the 4th March, 1921, for a statement showing:— 1. The amounts loaned or the credits made by the Government of Canada since the 19th April, 1920 (*a*) to Greece, (*b*) to Roumania. 2. The respective dates of these loans or credits to (*a*) Greece, (*b*) Roumania. 3. The nature of goods bought by the Government of Canada (*a*) for Greece, (*b*) for Roumania. 4. The names of corporations, firms or persons from whom these goods have been purchased, (*a*) the nature of the merchandise in each case, (*b*) the amounts paid by the Government to these corporations, firms or persons in each case and also the date of said payments. Presented May 13, 1921. Mr. Archambault.....*Not printed.*

171. Return to an Order of the Senate of the 17th May, 1921, for a Return showing:— 1. The amount of money paid each year by the Government of Canada subsequent to 1910 to, for, or in connection with: (*a*) The Intercolonial Railway (*b*) the Canadian Northern Railway, and its subsidiaries; (*c*) the Grand Trunk Pacific Railway; (*d*) the Transcontinental Railway; (*e*) the Grand Trunk Railway of Canada. 2. Apart from the above, the amount of loans to each. 3. The total amount charged to date to capital account against or in connection with the Intercolonial Railway and the Grand Trunk Pacific Railway, separately. 4. The additional amount, if any, paid by the Government to, or in connection with the Intercolonial Railway, and the Grand Trunk Pacific Railway, separately, and not charged to capital account. The Senate. *Not printed.*

172. Return to an Order of the House of the 9th May, 1921, for a copy of all correspondence between any member of the Government or any official of the Insurance Department with any member of any Provincial Government or any Provincial Superintendent of Insurance or any association of Provincial Superintendents of Insurance with respect to the resolution amending the Insurance Act standing in the Minister of Finance's name on the Order Paper or the subject matter of the resolution. Presented May 20, 1921. Mr. Lemieux.....*Not printed.*

173. Copy of correspondence in respect to an alleged invitation to the Honourable P. J. Veniot to enter the Dominion Cabinet. Presented by Hon. Mr. Meighen, May 20, 1921.

174. Return to an Order of the House of the 28th April, 1921, for a Return showing:— 1. How many automobiles the Government owns and uses in Ottawa. 2. How many chauffeurs are employed, their names and respective salaries. 3. Who the Ministers are and Deputy Ministers who use the said cars. 4. What other officials are using them and for what special purpose. 5. Whether any of said automobiles have been used on Sundays during the last fiscal year. If so, by whom. 6. Whether the Government has any garage in the city of Ottwa. 7. If so, what it cost during the last fiscal year for maintenace, wages, gasoline, repairs of all, and tires, respectively. 8. Whether the said garage was purchased by the Government. If so, from whom, at what price, and when it was purchased. Presented May 26, 1921. Mr. Lanctot. *Not printed.*

175. Return to an Order of the House of the 7th March, 1921, for a Return showing:— 1. Number of Civil Servants in the Inside Service in each Department of the Government on December 31, 1920. 2. How many days absence, exclusive of regular holidays, were recorded in each Department for the year 1920. Presented May 26, 1921. Mr. Steele .....*Not printed.*

176. Report of the Committee appointed by the Minister of Justice to advise upon the revision of the Penitentiary Regulations and the Amendment of the Penitentiary Act, February 28, 1921. Presented by Hon. Mr. Doherty, May 28, 1921...*Not printed.*

177. Copy of Draft Conventions and recommendations of the International Labour Conference, Washington, 1919, and of the International Labour Conference, Geneva, 1920 Presented by Hon. Mr. Doherty, May 28, 1921.....*Not printed.*

178. Copy of all papers, correspondence, etc., in the Department of the Naval Service in connection with the sale of H.M.C.S. "Niobe." Presented by Hon. Mr. Doherty, May 28, 1921.....*Not printed.*

179. Copy of an opinion from the Deputy Minister of Justice to the Under Secretary of State as to the date on which, under Section 109 of the Canada Temperance Act, prohibition, if the vote be favourable to, is to come into force in New Brunswick, and how that day is to be determined. Presented by Hon. Mr. Doherty, May 28, 1921. *Not printed.*

180. Copy of Order in Council, P.C. 1217, dated 9th day of April, 1921, transferring the administration of the Agricultural Fertilizers Act from the Department of Health to the Department of Agriculture. Presented by Hon. Mr. Tolmie, May 31, 1921. *Not printed.*

CONTENTS OF VOLUME 9—*Continued.*

181. Return to an Order of the House of the 21st April, 1921, for a Return showing:—1. How many secretaries, private-secretaries, assistant-private-secretaries, joint-secretaries to Ministers of the Crown have been appointed since 1911. 2. Date of each nomination. 3. Names of the nominees. 4. Salary each has been receiving. 5. By what minister each has been appointed. 6. Whether all or any of such persons are still in the employ of the Government. If so, their names, what position they are occupying and salary they are receiving. Presented June 1, 1921. Mr. Parent.
Not printed.

182. Annual Report of the Superintendent of the Geodetic Survey of Canada for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Tolmie, June 2, 1921.
Not printed.

183. Copy of the Joint Report of the International Boundary Commission upon the Survey and Demarcation of the Boundary between the United States and Canada, from the western terminus of the land boundary along the forty-ninth parallel on the west side of Point Roberts, through Georgia, Haro, and Juan de Fuca Straits, to the Pacific ocean, together with two identical signed joint charts, in accordance with the provisions of Article VIII of the Treaty signed at Washington, April 11, 1908. Presented by Hon. Mr. Tolmie, June 2, 1921.....*Not printed.*

184. Interim report of His Honour Julge Snider on the disposition of a quantity of publications from the Distribution Branch of the Government Printing Bureau. Presented June 3, 1921.....*Not printed.*

184a. Letter from Fred Cook, Esq., Chairman of the Editorial Committee on Governmental Publications, and F. C. C. Lynch, Esq., respecting Judge Snider's Report on the discarding of publications at the Government Distribution Office, with a copy of Inventory No. 1. Presented June 4, 1921.....*Not printed.*

RAPPORT DE LA NAVIGATION

SHIPPING REPORT

SHIPPING REPORT

OF THE

DEPARTMENT OF CUSTOMS

CONTAINING THE

STATEMENTS OF NAVIGATION AND SHIPPING

OF THE

DOMINION OF CANADA

FOR

THE FISCAL YEAR ENDED MARCH 31

1920

COMPILED FROM OFFICIAL RETURNS IN THE DEPARTMENT OF CUSTOMS

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 11*a*—1921]

RAPPORT DE LA NAVIGATION

DU

MINISTÈRE DES DOUANES

CONTENANT LA

STATISTIQUE DE LA NAVIGATION INTÉRIEURE ET MARITIME

DU

DOMINION DU CANADA

POUR

L'EXERCICE CLOS LE 31 MARS

1920

RAPPORTS OFFICIELS COMPILÉS DU
MINISTÈRE DES DOUANES

IMPRIMÉ PAR ORDRE DU PARLEMENT

OTTAWA
THOMAS MULVEY
IMPRIMEUR DE SA TRÈS EXCELLENTE MAJESTÉ LE ROI
1920

No. 11*a*—1921]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., etc., Governor General and Commander-in-Chief of the Dominion of Canada.

May it Please Your Excellency:—

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Customs, containing Statements of Navigation and Shipping of the Dominion of Canada for the Fiscal Year ended March 31, 1920, as compiled from official returns.

All of which is respectfully submitted.

R. W. WIGMORE,
Minister of Customs and Inland Revenue.

Ottawa, November 2, 1920.

A Son Excellence le due de Devonshire, C.J., C.P., G.C.M.G., G.C.O.V., etc., etc., etc., Gouverneur général et Commandant en chef du Dominion du Canada.

Qu'il Plaise à Votre Excellence:—

Le soussigné a l'honneur de présenter à Votre Excellence le rapport annuel du ministère des Douanes, comprenant les tableaux de la navigation et du commerce du Dominion du Canada, pour l'exercice clos le 31 mars 1920, tel que compilé des rapports officiels.

Le tout respectueusement soumis.

R. W. WIGMORE,
Ministre des Douanes et du Revenu de l'Intérieur.

Ottawa, 2 novembre 1920.

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TONNAGE SHOWN IN STATEMENTS ARE NET TONS

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No. 1.—Comparative Statement showing the Tonnage of all Vessels entered Inwards and Outwards, from 1868 to 1920, inclusive.

N° 1.—Tableau comparatif montrant le tonnage de tous les navires venant de la mer et allant à la mer de 1868 à 1920, inclusivement.

NAVIGATION.

Fiscal Year. — Année fiscale.	Vessels built. — Navires construits.	Vessels registered. — Navires enregistrés.	Vessels entered Inwards and Outwards (Sea-going and Inland Navigation exclusive of Coasting). — Navires venant de la mer et allant à la mer (navigation maritime et intérieure à l'exclusion de ceux servant au cabotage).	Vessels employed in the Coasting Trade entered Inwards and Outwards. — Navires servant au commerce par cabotage entrant ou sortant du Canada.	Vessels sold to other countries. — Navires vendus à d'autres pays	
					Tonnage. — Tonnage.	Value. — Valeur.
	Tons.	Tons.	Tons.	Tons.	Tons	$
1868	87,230	113,692	12,982,825	. .	. .	. .
1869	96,439	125,408	10,461,044	. .	. .	. .
1870	93,166	110,852	11,415,870	. .	. .	. .
1871	106,101	121,724	13,126,028	. .	. .	. .
1872	114,065	127,371	12,808,160	. .	. .	. .
1873	140,370	152,226	11,748,997	. .	. .	. .
1874	174,404	163,016	11,399,857	. .	. .	. .
1875	188,098	204,002	9,537,155	. .	. .	. .
1876	165,041	144,422	9,911,199	10,300,939	64,134	2,189,270
1877	127,297	126,160	11,031,244	8,968,862	46,329	1,576,244
1878	106,976	100,089	12,054,890	11,047,661	35,039	1,218,145
1879	103,551	94,882	11,646,812	12,066,683	19,318	529,824
1880	68,756	64,982	13,577,845	14,053,013	16,208	464,327
1881	79,364	70,210	13,802,432	15,116,766	16,808	348,018
1882	68,240	78,076	13,379,882	14,791,064	16,161	402,311
1883	73,576	78,220	13,770,735	15,683,566	23,896	506,538
1884	70,287	80,822	14,350,026	15,473,707	17,368	416,756
1885	57,456	65,962	14,084,712	15,944,422	13,177	246,277
1886	37,531	40,872	13,969,232	16,368,274	14,343	266,363
1887	26,798	67,662	14,090,998	17,513,677	9,263	143,772
1888	22,698	33,298	15,217,308	18,789,279	14,479	289,969
1889	23,835	31,998	16,054,221	19,834,577	16,173	266,817
1890	39,454	53,853	18,446,100	22,797,115	22,844	442,781
1891	55,477	52,506	18,860,648	24,694,580	15,143	280,474
1892	44,321	61,457	18,692,455	24,783,844	36,399	506,747
1893	38,521	45,796	18,539,534	24,579,123	31,317	363,916
1894	23,497	29,878	20,353,081	26,560,968	21,960	243,429
1895	18,728	26,125	19,100,963	25,473,434	16,567	172,563
1896	10,753	14,344	21,870,473	27,431,753	12,203	99,392
1897	12,058	22,959	23,373,933	27,267,979	9,158	105,164
1898	22,426	27,716	24,744,116	29,663,950	17,210	191,069
1899	22,085	28,257	25,420,110	30,212,496	7,562	126,466
1900	28,544	40,443	26,914,095	33,631,730	13,354	205,618
1901	20,156	35,156	26,029,808	34,444,796	4,490	66,468
1902	28,288	34,236	30,025,404	40,700,907	11,360	235,865
1903	30,856	41,405	33,655,043	44,990,358	11,172	220,602
1904	28,397	33,192	31,202,205	45,505,122	7,208	87,115
1905	21,865	27,583	32,272,950	44,377,261	3,696	100,363
1906	18,724	37,639	34,732,172	46,324,062	9,487	187,725
*1907	33,205	31,635	30,595,891	31,691,420	3,855	68,190
1908	49,928	78,144	39,575,031	50,529,835	4,515	132,900
1909	29,023	32,899	40,701,603	52,670,198	3,644	98,643
1910	24,059	33,383	44,567,991	56,750,928	5,047	133,800
1911	22,812	50,006	47,429,545	66,627,934	5,885	201,526
1912	31,065	30,021	52,973,127	66,267,662	4,265	140,350
1913	24,325	30,225	57,849,783	73,644,713	7,976	610,650
1914	46,887	46,909	61,919,483	78,356,809	8,258	169,618
1915	45,721	55,384	53,604,153	73,099,982	17,044	1,150,950
1916	13,497	102,239	57,721,098	68,709,424	4,529	192,575
1917	28,638	105,826	65,712,544	64,895,622	24,954	4,398,570
1918	53,912	70,350	66,802,488	61,462,600	25,252	5,330,850
1919	104,444	102,883	53,229,048	54,503,325	48,965	14,612,338
1920	164,074	237,022	49,493,533	60,552,658	53,407	17,819,477

* 9 months.

No. 2.—STATEMENT showing the Description, Number and Tonnage of Vessels built and registered, also the Number, Tonnage and Value of Vessels sold to other Countries at each Port and Outport in the Dominion of Canada during the Fiscal Year ended March 31, 1920.

N° 2.—ETAT sur la description, le nombre et tonnage des navires construits et enregistrés, ainsi que le nombre, tonnage et valeur des bateaux vendus à d'autres pays dans chaque port et port secondaire.

Ports and Outports—Ports et ports secondaires.	Built—Construits.						Registered—Enregistrés.						Ships sold to other countries. Vendus à d'autres pays.		
	Steam. — A vapeur.		Sail. — A voile.		Total.		Steam. — A vapeur.		Sail. — A voile.		Total.				
	No.	Tonnage.	No.	Tonnage.	No	Tonnage.	No	Tonnage.	No	Tonnage.	No	Tonnage.	No	Tonnage.	Value-Valeur.
Annapolis Royal, N.S.	1	60	4	1,687	5	1,747	1	60	4	1,687	5	1,747	2	819	110,000
Arichat, N.S.	1	13			1	13	1	13			1	13	1	28	1,200
Barrington Passage, N.S.	4	46	1	69	5	115	4	46	1	69	5	115			
Bridgeburg, Ont.	2	2,792			2	2,792							2	2,792	1,500,000
Campbellton, N.B.			1	643	1	643									
Canso, N.S.									1	42	1	42			
Charlottetown, P.E.I.	1	9	2	194	3	203	2	19	11	678	13	697	1	92	2,650
Chatham, N.B.	2	59	3	13	5	72									
Collingwood, Ont.	4	4,376			4	4,376	1	14			1	14			
Halifax, N.S.	5	704	4	1,470	9	2,174	14	6,696	4	480	18	7,176			
LaHave, N.S.	3	811	26	5,586	29	6,397	3	811	26	5,586	29	6,397	2	399	81,000
Liverpool, N.S.	1	110	2	189	3	299			4	900	4	900	2	2,346	650,500
Lockeport, N.S.			3	508	3	508									
Lunenburg, N.S.	4	56	26	4,445	30	4,501	4	56	29	4,841	33	4,897	6	806	182,000
Margaretsville, N.S.			1	413	1	413			1	376	1	376			
Montreal, Que.	8	36,673	1	7	9	36,680	64	155,071	21	7,233	85	162,304	7	18,364	5,635,177
New Westminster, B.C.	24	214	14	566	38	780	24	214	14	566	38	780	1	1,434	470,000
Ottawa, Ont.	1	65			1	65	10	1,052	4	956	14	2,008			
Parrsboro, N.S.	4	914	14	6,826	18	7,740	7	1,025	15	6,915	22	7,940			
Peterborough, Ont.	1	714			1	714	1	486			1	486			
Pictou, N.S.	1	1,044	2	795	3	1,839			2	795	2	795	1	336	65,000
Port Hurwell, Ont.	1	10			1	10	1	10			1	10			
Port Clyde, N.S.	1	11			1	11									
Port Hawkesbury, N.S.	1	30			1	30	1	30			1	30			
Port Stanley, Ont.	2	37			2	37	2	37			2	37			
Prince Albert, Sask.							4	384	1	145	5	529			
Prince Rupert, B.C.	4	39			4	39	6	60			6	60			
Quebec, Que.	7	338	14	1,215	21	1,553	12	838	16	1,475	28	2,313			
Rimouski, Que.													1	1,353	650,000
St. Andrews, N.B.							3	48			3	48	1	42	2,000
St. Catharines, Ont.							1	47			1	47	1	51	2,000
St. John, N.B.	4	534	3	630	7	1,164	7	782	7	989	14	1,771	8	8,185	3,228,500
Sault Ste. Marie, Ont.	3	45	1	87	4	132	3	45	1	87	4	132			
Shelburne, N.S.	3	722	11	2,158	14	2,880	4	459	5	1,133	9	1,592	2	419	78,000
Sorel, Que.							1	7			1	7			
Sydney, N.S.			3	334	3	334			3	334	3	334			
Three Rivers, Que.	12	10,909			12	10,909									
Toronto, Ont.	5	9,974			5	9,974	10	13,217			10	13,217	1	2,980	624,050
Vancouver, B.C.	62	51,608	7	1,843	69	53,451	24	667	19	7,362	43	8,029	6	1,727	322,400
Victoria, B.C.	5	35	4	703	9	838	14	890	2	44	16	934	15	9,262	3,775,000
Weymouth, N.S.	1	205	17	7,188	18	7,393	1	205	17	7,188	18	7,393	4	890	210,000
Windsor, N.S.			4	1,942	4	1,942			4	1,942	4	1,942	1	116	8,000
Windsor, Ont.													1	144	12,000
Winnipeg, Man.	1	77			1	77	4	145			4	145			
Yarmouth, N.S.	4	1,002	1	147	5	1,149	9	1,033	4	742	13	1,775	2	682	210,000
Total	183	124,236	169	39,838	352	164,074	243	184,457	216	52,565	459	237,022	68	53,467	17,819,477

No. 3.—STATEMENT showing the Trade via St. Lawrence River (Sea-going Vessels) Inwards and Outwards.

N° 3.—ETAT du commerce *via* le fleuve Saint-Laurent (navires allant en mer) intérieur et maritime.

	Vessels Navires	Tons Register Tonnage enregistré	Freight, Tons weight Fret, poids tonneaux	Freight, Tons measurement Fret, jaugeage tonneaux
Inwards—Interieur	393	1,728,515	378,668	26,816
Outwards—Maritime	753	2,240,118	2,902,623	366,198
Total trade—Total du commerce	1,146	3,968,633	3,281,291	393,014

No. 4.—STATEMENT of Vessels, British, Canadian and Foreign,

N° 4.—ETAT des navires britanniques, canadiens et étrangers

No.	Ports and Outports. Port et ports secondaires.	With Cargoes Chargés.									
		British—Britanniques.					Canadian—Canadiens.				
		Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneaux	Freight, Tons measurement. Fret, jaugeage tonneaux.	Crew. Equipage.	Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneaux.	Freight, Tons measurement. Fret, jaugeage tonneaux.	Crew. Equipage.
1	Alert Bay, B.C.										
2	Annapolis Royal, N.S.						8	732	1,308	1,404	34
3	Arichat, N.S.						74	1,374	1,065		400
4	Baddeck, N.S.						18	476	9		69
5	Barrington Passage, N.S.						2	154	136		10
6	Bathurst, N.B.										
7	Digby, N.S.						2	190	15		10
8	Bridgetown, N.S.						2	264	494	507	10
9	Bridgewater, N.S.						3	368	576		13
10	Britannia Beach, B.C.						10	3,456	61		133
11	Butedale, B.C.						21	368			117
12	Campbellton, N.B.										
13	Campo Bello, N.B.						4	16	14		8
14	Canso, N.S.						7	703	1,058		42
15	Caraquet, N.B.						145	2,126	1,450		602
16	Charlottetown, P.E.I.	7	628	785		36	6	869	1,340		35
17	Chatham, N.B.						1	452	778		8
18	Chemainus, B.C.						1	64	31		7
19	Chester, N.S.						15	184	130		62
20	Chetleamp, N.S.										
21	Church Point, N.S.						1	123	175		5
22	Clark's Harbour, N.S.	8	139			45	2	96	45		7
23	Clementsport, N.S.						2	198	2	2	10
24	Dalhousie, N.B.										
25	Digby, N.S.						5	344	352		18
26	Dorchester, N.B.										
27	Freeport, N.S.						7	227	106		20
28	Gaspé, Que.	2	1,536	600		28	3	285	1,200		20
29	Georgetown, P.E.I.						3	320	639		14
30	Glace Bay, N.S.						21	545			56
31	Halifax, N.S.	316	1,045,826	81,078		50,500	186	82,648	41,651		3,233
32	Hantsport, N.S.						2	2,300	17		18
33	Hillsboro, N.B.										
34	Indian Island, N.B.										
35	Isaac's Harbour, N.S.	1	71	135		5					
36	Joggin Mines, N.S.										
37	Ladner, B.C.										
38	Ladysmith, B.C.						1	126	90		10
39	LaHave, N.S.	2	603	1,056		16	81	10,385	15,198		1,188
40	Lévis, Que.	2	7,005	107		131					
41	Liverpool, N.S.						42	2,597	3,039		462
42	Lockeport, N.S.						24	812	1,706		258
43	Lord's Cove, N.B.						50	415	646		100
44	Louisburg, N.S.	26	52,467	84,824		974	11	4,918	594		204
45	Lower East Pubnico, N.S.	1	73	48		5	20	894	435		211
46	Lunenburg, N.S.						306	29,907	39,484		5,021
47	Magdalen Islands, Que.						1	71	55		5
48	Mahone Bay, N.S.						15	1,463	1,949		191
49	Moncton, N.B.						1	226	460		7
50	Montague Bridge, P.E.I.	1	80	15		5					
51	Montreal, Que.	187	877,312	136,627	15,010	25,288	22	45,201	50,058	2,112	729
52	Murray Harbour, P.E.I.						4	80	53		19
53	Nanaimo, B.C.						34	3,318	2,061		272
54	Newcastle, N.B.										
55	New Westminster, B.C.										
56	North East Harbour, N.S.						2	46	11		12
57	North Head, N.B.						20	2,261	369		148
58	North Sydney, N.S.	207	93,654	7,518		6,706	32	14,160	7,885		833
59	Ocean Falls, B.C.	38	62,008	159		2,942					
60	Parrsboro, N.S.						2	417	825		9
61	Paspebiac, Que.										
62	Pictou, N.S.						2	452	363		12
63	Port Alberni, B.C.						3	192	158		22
64	Port Hawkesbury, N.S.	22	3,381	2,289		465	5	700	878		84
65	Port Hastings, N.S.										
66	Port Hood, N.S.										
67	Port La Tour, N.S.						1	66	65		5
68	Port Mulgrave, N.S.										
69	Port Simpson, B.C.										

SESSIONAL PAPER No. 11a

entered Inwards *from Sea*, at each Port and Outport.

venant de la mer entrés à chaque port et port secondaire.

In Ballast—Lèges.													
Foreign. Etrangers.					British. Britanniques.			Canadian. Canadiens.			Foreign. Etrangers.			No.
Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneau.	Freight, Tons measurement. Fret, jaugeage tonneau.	Crew. Equipage.	Vessels. Navires.	Tons register. Tonnage enregistré.	Crew. Equipage.	Vessels. Navires.	Tons register. Tonnage enregistré.	Crew. Equipage.	Vessels. Navires.	Tons register. Tonnage enregistré.	Crew. Equipage.	
								1	91	10	103	8,570	746	1
4	985	1,831	1,900	23							3	18	6	2
3	163	135		30				8	357	44	1	78	23	3
10	757	5		114										4
1	135	140		9				8	183	61	25	1,814	139	5
					3	5,598	99				1	1,235	14	6
														7
														8
2	307	336		8							7	4,061	60	9
1	20	2		4				143	51,963	1,997	49	10,455	304	10
28	1,928			181	2	160	52	37	356	135	133	2,428	786	11
					6	12,967	189	1	54	4	2	1,951	29	12
								140	23,078	1,597	303	7,725	1,192	13
10	1,770	1,601		90	13	2,194	259	60	7,870	1,056	86	5,180	1,479	14
														15
1	579	986		7				3	1,287	33				16
					11	19,151	314				8	4,732	104	17
1	8	1		3				19	1,745	60	47	1,524	116	18
											1	7	2	19
1	100	150		7										20
														21
6	186	145		18							24	489	83	22
								4	396	20				23
					1	2,323	32	1	799	14	6	4,488	71	24
								3	2,809	24	1	331	25	25
1	319			6										26
								3	138	9				27
18	19,304	24,800		376	2	3,915	61	1	1,403	28	3	3,766	68	28
					6	367	28	1	53	5				29
					1	40	3	6	148	21				30
182	241,623	262,738		5,169	85	193,287	4,046	35	27,362	631	176	313,321	5,737	31
1	1,620	25		5				12	17,239	54	3	5,037	14	32
								5	4,605	20	3	524	15	33
								9	83	19	107	1,177	196	34
2	450	637		15							6	426	64	35
											9	1,123	29	36
1	8	3		3				7	310	34	1	7	4	37
								179	33,504	921	180	65,240	1,475	38
2	305	535		12				5	744	64	6	375	66	39
														40
133	9,303	9,023		2,271	2	182	11	2	129	23	8	927	46	41
11	693	385		193							12	140	29	42
12	160	160		14				126	978	252	82	971	166	43
72	21,199	28,621		811	43	77,098	1,301	49	50,624	1,038	54	80,911	1,723	44
4	212	112		62				5	154	76	35	1,370	327	45
2	158	155		26				12	1,109	148	26	1,833	452	46
														47
														48
					1	3,230	45	3	165	11	1	44	2	49
					2	147	10							50
33	128,295	148,777	4,962	1,442	163	507,009	8,164	1	1,283	30	45	115,566	1,790	51
														52
24	5,021	3,420	533	285	1	4,908	89	116	13,785	650	708	167,791	4,571	53
					8	12,216	211				9	5,883	133	54
								4	231	19	2	428	10	55
2	438	863		8							1	44	17	56
7	90	97		14				139	23,372	1,608	43	769	105	57
8	17,890	41,500		293	413	151,352	4,561	170	34,448	1,698	226	90,522	6,532	58
34	53,607	24,446	65	1,115	1	1,626	80	2	1,414	55	57	58,107	2,286	59
1	121	148		5				15	5,107	103	45	10,845	576	60
								1	1,141	21				61
1	119	225		4	2	561	15	2	1,436	28	5	1,585	34	62
								2	505	33	3	172	13	63
11	1,103	673		116	12	904	79	6	848	69	7	646	124	64
								1	187	14				65
2	147	38		40										66
														67
1	65	63		2	1	151	24	1	76	16				68
											10	3,595	299	69

No. 4.—Statement of Vessels, British, Canadian and Foreign.

N° 4.—Etat des navires britanniques, canadiens et étrangers

No.	Ports and Outports. Port et ports secondaires.	With Cargoes—Chargés.									
		British—Britanniques.					Canadian—Canadiens.				
		Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneaux.	Freight, Tons measurement. Fret, jaugeage tonneaux.	Crew. Equipage.	Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneaux.	Freight, Tons measurement. Fret, jaugeage tonneaux.	Crew. Equipage.
70	Port Wade, N.S.										
71	Powell River, B.C.						1	193	75		5
72	Prince Rupert, B.C.	32	10,678	880		1,090	536	31,308	4,965		3,135
73	Quebec, Que.	118	634,145	13,103	4,732	24,432	2	3,881	1,181		50
74	Richibucto, N.B.										
75	Rimouski, Que.										
76	River Hebert, N.S.										
77	St. Andrews, N.B.						24	274	266		38
78	St. George, N.B.						2	4	2		2
79	St. John, N.B.	112	480,770	137,031	39,681	14,680	45	32,136	29,056	2,066	533
80	St. Martin's, N.B.						2	685	27		7
81	St. Peter's, N.S.	2	339	500		11	1	17	2		6
82	St. Stephen, N.B.										
83	Salmon River, N.S.	2	82	4		9					
84	Sandy Point, N.S.	3	252	293		18	5	455	681		32
85	Shediac, N.B.										
86	Shelburne, N.S.	1	73	90		5	2	119	12		33
87	Shippegan, N.B.						85	1,225	1,063		368
88	Sidney, B.C.						16	88	20		43
89	Souris, P.E.I.	2	111	70		10					
90	Steveston, B.C.						1	27	25		6
91	Summerside, P.E.I.						1	93	201		7
92	Sydney, N.S.	74	221,189	489,097		3,472	39	42,730	94,845		1,060
93	Three Rivers, Que.										
94	Truro, N.S.										
95	Tusket, N.S.						1	9	1		5
96	Union Bay, B.C.						2	156	99		14
97	Vancouver, B.C.	163	383,277	163,626	81,852	12,227	485	742,234	95,607	126,985	34,609
98	Victoria, B.C.	244	313,722	3,950	318	19,326	247	172,024	16,700	2,157	7,346
99	Westport, N.S.						3	276	313		10
100	Weymouth, N.S.						9	908	564	13	44
101	White Rock, B.C.						27	442	5,831		54
102	Windsor, N.S.						10	2,201	1,430		43
103	Wolfville, N.S.										
104	Yarmouth, N.S.	1	73	200		5	43	4,115	4,506		405
	Total	1,574	4,189,494	1,124,085	141,593	162,431	2,819	1,253,199	436,489	135,246	62,618

SESSIONAL PAPER No. 11a

entered Inwards *from Sea*, at each Port and Outport—*Concluded.*

venant de la mer entrés à chaque port et port secondaire—*Fin.*

In Ballast—Lèges.													
Foreign. — Etrangers.					British. — Britanniques.			Canadian. — Canadiens.			Foreign. — Etrangers.			No.
Vessels. — Navires.	Tons register. — Tonnage enregistré.	Freight, Tons weight. — Fret, poids tonneaux.	Freight, Tons measurement. — Fret, jaugeage tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	
								1	20	2				70
58	27,331	14,603	676	1,395	5	14,434	249	5	373	45	30	5,916	529	71
744	31,231	40,453	1	3,331	2	495	57	163	28,667	1,654	245	6,920	1,285	72
8	18,556	2,319		384	49	98,798	1,523				12	21,439	369	73
					1	325	8				2	501	14	74
					9	17,142	273	4	3,352	72	5	2,614	55	75
											1	577	8	76
535	9,081	17,157		1,074				338	21,578	1,702	269	3,384	525	77
1	322	560		5				8	59	15	107	6,685	311	7
107	229,634	61,572		7,034	87	254,785	3,863	55	12,041	348	225	98,440	1,808	7
1	430	4		4				17	7,857	63	33	6,063	293	8
17	2,696	1,334		499							2	250	7	81
53	1,613	3,438		112				6	206	14	18	219	34	82
											1	5	2	83
48	4,994	5,496		779							65	4,540	1,217	84
					1	1,681	29				1	193	7	85
15	1,222	1,161		253				2	974	16	20	1,540	396	86
1	247	542		7										87
23	5,306	3,487	62	191				37	936	106	28	3,149	133	88
					1	33	4	12	500	119	6	464	80	89
3	73	75		15				94	2,031	326	142	3,727	525	90
														91
59	42,429	75,944		1,594	151	281,833	4,330	78	47,223	1,274	105	131,703	3,597	92
					7	17,505	270				1	1,337	28	93
											2	267	9	94
1	111	350		22										95
					16	51,033	842	20	5,335	167	196	79,171	1,089	96
317	390,413	466,146	12,905	11,286	13	36,561	967	276	110,643	4,602	197	106,871	2,423	97
559	666,036	43,880	12,095	28,106	35	71,479	2,566	394	190,998	12,368	691	259,211	11,709	98
34	646	281		52				6	104	12	4	76	8	99
								2	194	9	1	92	3	100
2	14	403		4				36	878	97	14	308	42	101
9	1,932	3,374		41				33	39,066	272	19	15,631	171	102
4	378	947		20										103
148	237,013	17,850		11,734				20	893	211	79	2,924	681	104
3,380	2,181,093	1,317,152	33,199	80,723	1,159	1,846,293	34,654	2,964	787,897	36,248	5,185	1,752,398	59,341	

No. 5.—STATEMENT of Vessels, British, Canadian

N° 5.—TABLEAU des navires britanniques, canadiens

ABSTRACT BY COUNTRIES—

No.	Countries from which arrived. Pays d'où ils viennent.	With Cargoes—Chargés.									
		British—Britanniques.					Canadian—Canadiens.				
		Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneaux.	Freight, Tons measurement. Fret, jaugeage tonneaux.	Crew. Equipage.	Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids tonneaux.	Freight, Tons measurement. Fret, jaugeage tonneaux.	Crew. Equipage.
1	United Kingdom	509	2,513,906	237,138	51,040	100,453	45	59,022	20,443	3,295	973
2	Australia	22	126,783	10,567	37,183	4,281					
3	British South Africa						1	452	157		8
4	British Honduras	1	2,688			46					
5	British West Indies	68	154,007	90,881	12,118	5,648	119	22,162	32,648		820
6	British Straits Settlements	6	28,942	8,713	27,300	500					
7	Fiji Islands										
8	Gibraltar	3	9,302	1,100		114					
9	Malta										
10	Newfoundland	345	293,486	418,554		11,190	143	72,102	95,944	674	2,852
11	New Zealand	9	54,886	20,226		1,045					
12	Argentina	1	3,155	5,690		51	1	3,549	664		41
13	Austria										
14	Belgium	20	91,869	11,248	59	2,315					
15	Brazil										
16	Chili										
17	China	11	71,670	3,553	1,459	1,269	27	144,719	65,350	99,992	8,699
18	Cuba	3	2,837	6,075		57	17	25,457	45,615	209	502
19	Denmark										
20	Dutch East Indies										
21	France						3	6,704	416		14
22	French Africa										
23	French West Indies						1	350	615		7
24	Germany										
25	Greece										
26	Greenland, Iceland, etc.										
27	Hawaii	1	3,841	3,470	4,700	83					
28	Hayti	1	1,045	1,707		20					
29	Holland	2	9,306	3,000		117					
30	Honduras						2	833	1,050		15
31	Italy	1	3,218	428		45					
32	Japan	3	20,871	1,535	4,530	411	13	17,750	6,046	12,538	904
33	Mexico	1	2,183	4,000		37	3	4,172	11,963		72
34	Norway										
35	Peru	6	17,680	36,185		265					
36	Philippines						1	2,804	4,711	7,163	48
37	Portugal	1	284	500		7	2	720	1,150		16
38	Roumania										
39	Russia	1	1,998	100		25	4	14,895	3,210	8,737	1,074
40	St. Pierre										
41	San Domingo	1	1,045	2,120		21	1	410	682		7
42	Sea Fisheries	79	8,019	3,242	25	1,793	1,426	52,572	42,301		12,667
43	Spain	4	10,340	12,831		148	4	1,677	2,891		30
44	Sweden										
45	Turkey	1	2,668	50		41					
46	United States	474	753,465	240,872	3,179	32,449	1,005	822,733	97,428	2,638	33,862
47	Virgin Islands of U.S.A.						1	116	205		7
48	Sea, Cable and Admiralty										
	Total	1,574	4,189,494	1,124,085	141,593	162,431	2,819	1,253,199	436,489	135,246	62,618

SESSIONAL PAPER No. 11a

and Foreign, entered Inwards *from Sea*.

et étrangers, *venant de la mer*.

ANALYSE PAR PAYS.

Foreign. — Etrangers.					In Ballast—Lèges.									No.
					British. — Britanniques.			Canadian. — Canadiens.			Foreign. — Etrangers.			
Vessels. — Navires.	Tons register. — Tonnage enregistré.	Freight, Tons weight. — Fret, poids tonneau.	Freight, Tons measurement. — Fret, jaugeage tonneau.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	
5	7,270	7,070		155	296	836,628	13,574	39	25,507	528	95	161,133	2,927	1
					7	26,810	821				1	994	15	2
											7	19,120	305	3
														4
16	9,314	12,335		224	2	2,907	60				1	193	7	5
1	5,993		370	125							1	1,450	59	6
1	1,391	2,244		26										7
2	5,443	1,200		74	114	314,177	4,248	6	18,628	218	59	143,077	2,050	8
					1	2,495	40							9
37	33,175	51,279		787	437	87,337	4,138	240	103,850	3,364	23	24,596	654	10
														11
														12
					2	6,414	86							13
					7	18,309	250				4	9,522	144	14
											1	449	7	15
1	5,045	11,200		78										16
19	96,049	6,499	4,689	2,154	2	6,392	107	18	121,255	8,117				17
12	21,054	38,529		402	1	2,793	42	1	1,283	30				18
											11	2,226	65	19
2	7,528	6,350		121										20
18	65,351	6,594	4,962	1,094	38	114,667	1,963	6	6,141	100	51	114,475	1,931	21
					2	4,171	66							22
														23
2	8,036	4,077		120							4	2,673	133	24
					3	9,416	116				11	28,463	387	25
											14	2,357	91	26
											1	221	19	27
														28
1	4,389	4,600		66	5	16,460	216				36	81,516	1,522	29
														30
					43	118,530	1,595				23	64,489	948	31
35	180,653	10,496	13,809	4,574	5	21,652	316				4	16,679	368	32
40	190,379	343,867		1,480										33
4	10,151	854		148							13	26,363	401	34
19	51,895	109,179		645	1	2,349	41							35
														36
					9	18,112	274				4	8,466	169	37
					1	2,668	41				1	1,900	34	38
								4	19,734	1,413	1	2,256	39	39
22	4,123	967		560	37	2,309	177	50	5,442	328	103	17,110	3,346	40
15	16,664	26,592		414										41
1,054	35,985	16,549		3,738	42	4,013	674	298	13,576	2,446	520	32,081	7,281	42
6	7,462	10,259		128	3	10,093	143	4	4,196	68	10	14,132	248	43
											17	8,617	182	44
					1	1,936	29							45
2,068	1,413,743	646,312	9,369	58,610	88	200,635	4,738	2,298	468,285	19,636	4,154	959,910	35,282	46
														47
					12	15,020	899				15	7,930	727	48
3,380	2,181,093	1,317,152	33,199	80,723	1,159	1,846,293	34,654	2,964	787,897	36,248	5,185	1,752,398	59,341	

No. 5.—STATEMENT of Vessels, British, Canadian

N° 5.—TABLEAU des vaisseaux britanniques, canadiens

RECAPI

	Vessels — Navires	Tons Register — Tonnage enrégistré	Freight, tons Weight — Fret, poids, tonneaux	Freight, tons Measurement — Fret, jaugeage tonneaux	Crew — Equipage
With cargo—Chargés—					
British—Britanniques	1,574	4,189,494	1,124,085	141,593	162,431
Canadian—Canadiens	2,819	1,253,199	436,489	135,246	62,618
Foreign—Etrangers	3,380	2,181,093	1,317,152	33,199	80,723
Total	7,773	7,623,786	2,877,726	310,038	305,772

and Foreign, entered Inwards *from Sea*.—Concluded.

canadiens et étrangers entrés aux ports, *venant de la mer—Fin*.

TULATION

	Vessels Navires	Tons Register Tonnage enregistré	Freight, tons Weight Fret, poids, tonneaux	Freight, tons Measurement Fret, jaugeage tonneaux	Crew Equipage
In Ballast—Lèges—					
British—Britanniques	1,159	1,846,293	..	..	34,654
Canadian—Canadiens	2,964	787,897	..	..	36,248
Foreign—Etrangers	5,185	1,752,398	..	..	59,341
Total	9,308	4,386,588	..	..	130,243
Grand total	17,081	12,010,374	2,877,726	310,038	436,015

No. 6.—Statement of Vessels, British, Canadian and Foreign,

N° 6.—Tableau des navires britanniques, canadiens et étrangers

No	Ports and Outports. Ports et ports secondaires.	With Cargoes—Chargés.									
		British—Britanniques.					Canadian—Canadiens.				
		Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight. — Fret, poids, tonneaux.	Freight, Tons Measurement. — Fret, jaugeage, tonneaux	Crew. — Equipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight. — Fret, poids, tonneaux.	Freight, Tons Measurement. — Fret, jaugeage, tonneaux.	Crew. — Equipage.
1	Alert Bay, B.C.						17	4,685	9,505		324
2	Annapolis Royal, N.S.						2	442	550	610	23
3	Arichat, N.S.										
4	Baddeck, N.S.						24	1,730	12		197
5	Barrington Passage, N.S.										
6	Barton, N.S.						1	369		677	7
7	Bathurst, N.B.	3	5,598			92					
8	Bear River, N.S.						4	524		1,215	22
9	Belliveau's Cove, N.S.						2	335		603	8
10	Bridgewater, N.S.						9	2,449	3,644		52
11	Britannia Beach, B.C.						155	60,095	87,940	512	2,161
12	Butedale, B.C.						1	9			5
13	Campbellton, N.B.	11	20,441		62,335	291	2	296	429	2,865	10
14	Campo Bello, N.B.						24	1,065	235		100
15	Canso, N.S.						8	870	845	322	43
16	Caraquet, N.B.										
17	Cardigan, P.E.I.	2	131	154	1	10	1	162	244		6
18	Charlottetown, P.E.I.	13	696	815	4	58	8	1,740	2,567	25	67
19	Chatham, N.B.	15	24,729		75,156	400					
20	Chemainus, B.C.	4	14,970		6,750	174	14	3,235	1,440	1,469	73
21	Chester, N.S.										
22	Cheticamp, N.S.										
23	Church Point, N.S.										
24	Clark's Harbour, N.S.						2	116	80		9
25	Clementsport, N.S.						6	594	250	305	30
26	Dalhousie, N.B.	3	7,294			98					
27	Digby, N.S.						16	5,550	5,168	2,160	79
28	Dorchester, N.B.										
29	Freeport, N.S.						7	201	190		18
30	Gaspé, Que.	10	15,316		19,500	275	10	2,174		4,600	62
31	Georgetown, P.E.I.	7	391	453	1	32	1	53	43		5
32	Glace Bay, N.S.	5	132			51					
33	Halifax, N.S.	385	1,666,371	481,994	50,117	52,403	352	111,732	124,971	49,753	4,978
34	Hantsport, N.S.						2	3,194	4,050		10
35	Hillsboro, N.B.						10	10,657	12,500		43
36	Indian Island, N.B.						7	56	34		14
37	Isaac's Harbour, N.S.	2	453	10	92	14	1	77	24		5
38	Joggin Mines, N.S.						3	360	580	1,486	9
39	Ladner, B.C.						4	87	145		11
40	Ladysmith, B.C.						55	14,245	20,128	361	360
41	La Have, N.S.						10	2,457	4,680		66
42	Levis, Que.										
43	Liverpool, N.S.	1	73	150		5	90	8,882	12,297		1,067
44	Lockeport, N.S.						30	1,036	455		335
45	Lords Cove, N.B.						56	511	968		112
46	Louisburgh, N.S.	54	97,081	167,968		1,848	45	24,474	42,356		803
47	Lower East Pubnico, N.S.	1	73	114		3	7	404	544		44
48	Lunenburgh, N.S.	1	111	200		6	25	3,356	5,913		148
49	Mahone Bay, N.S.						3	418	789		18
50	Meteghan River, N.S.										
51	Moncton, N.B.	4	8,579		18,718	130	9	1,871	424	3,096	46
52	Montague Bridge, P.E.I.	9	626	658	9	42					
53	Montmagny, Que.	1	1,353	1,545		26					
54	Montreal, Que.	350	1,384,480	1,939,209	208,373	32,961	41	81,274	114,640	26,243	1,355
55	Murray Harbour, P.E.I.										
56	Nanaimo, B.C.	28	32,698	9,210		988	205	26,331	43,486	475	1,120
57	Newcastle, N.B.	8	12,219		24,700	212	2	2,375		4,900	118
58	New Westminster, B.C.	1	2,349	2,600		41	3	8,009	1,974		121
59	North East Harbour, N.S.										
60	North Head, N.B.						12	452	791		38
61	North Sydney, N.S.	428	206,148	202,577		10,236	160	50,912	63,292		2,834
62	Ocean Falls, B.C.	12	23,438	9,781		791	2	3,972	2,193		73
63	Parrsboro, N.S.	2	3,093	6,150		58	37	10,281	18,835		233
64	Paspebiac, Que.	1	271		729	6	5	2,826		5,681	66
65	Pictou, N.S.	4	3,443	7,419		64	8	3,854	4,875		75
66	Port Alberni, B.C.						8	585	547		60
67	Port Hastings, N.S.										
68	Port Hawkesbury, N.S.	3	206	144		15	4	425	83		64
69	Port Hood, N.S.										

SESSIONAL PAPER No. 11a

entered Outwards *for Sea* at each Port and Outport.

allant à la mer, entrés à chaque port et port secondaire.

In Ballast—Lèges.														
Foreign—Etrangers.					British—Britanniques.			Canadian—Canadiens.			Foreign—Etrangers.			
Vessel. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight. — Fret, poids, tonneaux	Freight, Tons Measurement. — Fret, jaugeage, tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires	Tons Register. — Tonnage enregistré.	Crew. — Equipage	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew — Equipage.	No.
8	148	111		32							95	8,378	769	1
3	18	15	15	6										2
3	147	165		28				87	1,551	463	1	78	23	3
19	12,331	10		359										4
23	207	127		84				14	243	160	5	281	88	5
														6
6	4,487			59										7
														8
														9
7	4,032	5,870		60										10
33	10,014	12,605		241				23	993	150	8	1,099	69	11
19	1,821			167	5	445	136	60	596	211	142	2,535	800	12
6	6,038		12,808	94										13
45	400	886		90				141	23,553	1,620	2	37	7	14
13	1,088	1,418		150	13	2,194	260	57	7,913	1,027	87	5,706	1,530	15
								151	2,160	585				16
														17
1	1,412	75	6	35				4	157	17				18
16	16,933		37,030	368										19
54	16,106	261	19,583	364				8	442	31	3	38	6	20
5	65	102		14				9	108	34				21
1	100	240		7										22
								1	727	8				23
34	497	335		81	8	193	59							24
														25
8	10,708			248										26
											3	24	9	27
1	319	600		6										28
														29
15	18,071	2,400	17,000	376										30
								2	26	7				31
														32
233	237,965	95,474	40,324	6,861	29	114,058	2,510	31	23,281	518	120	273,327	3,786	33
														34
6	1,043	2,015		31										35
106	1,153	1,160		195										36
3	104	104		15							4	235	41	37
11	1,817	3,245	3,784	40										38
1	316	185		10							2	15	8	39
132	66,234	54,527		1,574				36	2,447	312	53	4,505	360	40
6	154	266		15				82	7,977	1,632	3	349	60	41
								3	4,161	75				42
156	16,065	21,662		2,554	1	1,398	29	2	788	19	2	99	21	43
25	854	438		226							1	11	2	44
69	699	1,435		138				59	364	118	25	349	50	45
96	74,403	116,750		1,615	19	40,136	670	16	2,196	286	32	22,146	763	46
24	429	446		115				13	456	154	18	1,182	313	47
2	107	165		27				271	23,016	4,705	25	1,757	447	48
								11	712	134				49
								1	594	7				50
3	411	204	415	10										51
														52
														53
119	261,271	458,884	61,707	4,710	2	2,429	45	6	8,710	165	163	278,191	5,102	54
								4	81	19				55
597	227,380	192,948	714	4,968				93	4,976	657	189	11,691	1,235	56
11	5,145		10,825	118										57
10	12,941	7,704		267				2	107	13	1	112	25	58
2	62	17		5				3	59	17	1	44	17	59
36	438	1,239		74				153	27,308	1,636	11	133	22	60
115	138,747	245,075		3,347	15	1,141	253	10	759	44	168	36,499	5,616	61
80	96,804	61,236		3,165	1	1,626	80				12	12,989	931	62
44	7,856	15,420		183							20	6,501	492	63
5	5,622	13	11,251	84										64
5	1,585	2,841		33				2	367	27				65
2	3,055	7	2,039	34				1	4	2	1	62	5	66
								2	1,443	43	17	3,265	261	67
8	875	1,098		107	24	3,976	526	6	447	89	9	1,655	140	68
2	147	38		40										69

No. 6.—STATEMENT of Vessels, British, Canadian and Foreign,

N° 6.—TABLEAU des navires britanniques, canadiens et étrangers,

No	Ports and Outports. Ports et ports secondaires.	With Cargoes—Chargés.									
		British—Britanniques.					Canadian—Canadiens.				
		Vessels. Navires	Tons Register. Tonnage enregistré.	Freight, Tons Weight. Fret, poids, tonneaux	Freight, Tons Measurement. Fret, jaugeage, tonneaux.	Crew. Equipage.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Freight, Tons Weight Fret, poids, tonneaux.	Freight, Tons Measurement. Fret, jaugeage, tonneaux.	Crew. Equipage.
70	Port La Tour, N.S.										
71	Port Mulgrave, N.S.										
72	Port Simpson, B.C.										
73	Port Wade, N.S.						1	74	70	80	3
74	Powell River, B.C.	7	19,248	10,766	200	326	14	6,831	4,973		31
75	Prince Rupert, B.C.						33	41,235	1,278		1,928
76	Pugwash						1	336		289	8
77	Quebec, Que.	124	352,473	273,029	7,703	7,596	8	14,701	3,198	751	214
78	Rimouski, Que	9	17,942	23,608		270	4	3,352	3,975		72
79	River Hebert, N.S.										
80	St. Andrews, N.B.						164	5,261	1,983		503
81	St. George, N.B.						7	373	42	597	19
82	St. John, N.B.	175	650,886	739,266	273,179	15,504	76	33,814	38,519	19,421	675
83	St. Martins, N.B.						17	8,845	2	22,038	65
84	St. Peters, N.S.										
85	St. Stephen, N.B.						6	185		83	18
86	Salmon River, N.S.	2	142	200		6					
87	Sandy Cove, N.S.						1	15	5		2
88	Sandy Point, N.S.	3	252	293		18	1	794	1,150		20
89	Shediac, N.B.										
90	Sheet Harbour, N.S.										
91	Shelburne, N.S.	1	73	100		5	8	1,245	853		78
92	Sherbrooke, N.S.						2	232	113	80	11
93	Shippegan, N.B.										
94	Sidney, B.C.	1	2,613	1,076		39	20	4,644	4,959		110
95	Sorel, Que.						1	99	174		5
96	Souris, P.E.I.	2	80	86		9	4	400	360	83	28
97	Steveston, B.C.						72	1,475	1,271		217
98	Sydney, N.S.	357	313,290	539,013		5,875	179	78,247	139,063		2,449
99	Three Rivers, Que.	7	17,505	6,818		269					
100	Tusket, N.S.										
101	Union Bay, B.C.	43	176,190	70,992		3,638	11	22,001	9,732		1,220
102	Vancouver, B.C.	241	389,015	103,833	85,571	19,172	313	400,474	170,651	82,593	21,758
103	Victoria, B.C.	46	103,905	10,005	40	4,241	444	478,702	31,286	34	19,621
104	Westport, N.S.						6	104	33		12
105	Weymouth, N.S.						13	1,920	77	4,444	65
106	White Rock, B.C.						38	1,399	2,089		144
107	Windsor, N.S.						64	62,719	99,069	240	474
108	Yarmouth, N.S.	1	73	114		5	15	1,360	1,770		80
	Total	2,387	5,576,450	4,610,350	833,178	158,275	3,033	1,632,644	1,111,411	238,091	67,357

SESSIONAL PAPER No. 11a

entered Outwards *for Sea* at each Port and Outport—*Concluded.*

allant à la mer, entrés à chaque port et port secondaire—*Fin.*

In Ballast—Lèges.														
Foreign—Etrangers.					British—Britanniques.			Canadian—Canadiens.			Foreign—Etrangers.			
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight. — Fret, poids, tonneaux.	Freight, Tons Measurement. — Fret, jaugeage, tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipage.	No.
2	62	120		6				1	10	4				70
					1	154	24	2	1,618	35	16	6,117	285	71
											10	3,595	209	72
														73
78	26,233	26,854	300	1,720				6	360	54	12	7,717	142	74
8	2,354	2,215	1,400	80	32	3,157	821	706	21,979	2,960	974	44,481	5,789	75
														76
39	58,889	71,921	2,660	1,162	9	1,641	210				12	14,723	357	77
3	2,614	3,957		52										78
1	577	1,000		8										79
496	7,521	15,315		980				184	16,081	1,206	308	5,096	638	80
34	5,192	8,276	1,533	116				8	29	13	75	1,841	216	81
304	294,429	157,207	54,864	8,398	6	15,046	226	43	8,032	286	41	36,197	807	82
12	5,106		13,671	48				1	12	2	24	1,896	264	83
5	726	537		95							12	1,897	349	84
5	64	130		11				2	50	4	67	1,448	138	85
					1	11	4							86
														87
38	2,761	1,744		697				1	39	15	65	4,926	1,252	88
2	417	945		15				1	224	14				89
1	449	650		8										90
17	1,324	1,189		275				2	104	28	25	1,982	499	91
2	752	190	237	12										92
1	247		3,126	7				90	1,271	385				93
9	6,211	6,396		118				26	549	113	37	4,169	209	94
											1	1,079	22	95
2	138	41		14				17	586	147	4	281	68	96
115	3,021	2,557		441				11	145	38	31	838	119	97
158	211,708	400,193		3,775	65	202,353	3,073	21	27,281	586	46	16,983	1,577	98
1	1,337	971		26										99
1	111	350		22				1	9	5				100
158	92,160	105,941		993	3	3,291	90	24	7,052	236	57	4,253	467	101
249	234,169	150,774	25,665	8,869	65	97,585	4,222	199	35,352	1,820	280	273,155	5,312	102
333	215,155	16,401	761	9,774	92	217,923	7,485	384	486,858	16,566	869	746,879	29,491	103
33	627	101		70							1	19	2	104
2	296		801	9										105
7	172	202		23				27	421	55	6	147	24	106
35	28,465	45,039	545	268										107
180	228,995	29,595		11,342				57	4,110	721	30	2,020	508	108
4,562	2,700,906	2,360,627	323,067	82,864	391	708,757	20,723	3,178	769,894	40,278	4,226	1,854,729	71,682	

No. 7.—STATEMENT of Vessels, British, Canadian

N° 7.—TABLEAU des navires britanniques, canadiens et

ABSTRACT BY COUNTRIES -

Countries to which Departed. — Pays d'où il viennent.	With Cargoes—Chargés.									
	British—Britanniques.					Canadian—Canadiens.				
	Vessels. — Navires	Tons register. — Tonnage enregistré.	Freight, Tons weight. — Fret, poids, tonneaux.	Freight, Tons measurement. — Fret, jaugeage, tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Freight, Tons weight. — Fret, poids, tonneaux.	Freight, Tons measurement. — Fret, jaugeage, tonneaux	Crew. — Equipage.
1 United Kingdom	810	2,807,592	3,102,701	615,012	63,146	107	140,282	176,796	61,119	2,460
2 Australia	41	191,896	64,478	67,881	5,605	5	14,289	11,571	8,725	188
3 Bermuda	3	4,464	892		164					
4 British South Africa	19	72,458	92,954	41,056	946	1	799	1,500		15
5 British Guiana	27	74,251	99,650	571	2,734	6	5,127	8,314	961	130
6 British West Indies	4	864	985	2,123	27	42	25,887	32,204	13,283	558
7 British Oceania	13	46,071	28,397		1,328	3	7,487	2,792	948	118
8 British Straits Settlements										
9 Gibraltar	18	56,718	113,979		721					
10 Newfoundland	743	218,124	174,499	1,185	12,768	445	158,502	227,162	1,666	6,780
11 New Zealand	2	11,619	9,540	3,760	168					
12 Argentina	4	12,380	20,019	5,295	233	3	10,647	9,501	2,941	127
13 Azores and Madeira	1	2,900			62	5	1,573	2,244	619	38
14 Belgium	37	146,915	228,622	9,487	3,109					
15 Brazil	1	2,249	1,587		55	4	4,088	1,398	751	62
16 Canary Islands						3	1,022	1,765		20
17 Chili										
18 China	15	86,431	26,590	23,464	1,609	34	186,855	113,853	66,657	10,382
19 Cuba	2	3,794	1,700		57	33	28,548	36,904	9,081	626
20 Denmark										
21 France	67	201,326	292,240	23,886	4,244	17	29,750	45,237	16,201	496
22 French Africa	1	799		1,823	15					
23 French West Indies						7	1,118	1,365	2,357	46
24 Germany	1	2,704	6,260		43					
25 Greece	9	25,592	44,540		363					
26 Greenland, Iceland, etc	1	88			12					
27 Hayti										
28 Holland	11	38,303	48,688		854					
29 Italy	8	26,618	51,485	467	373					
30 Japan	7	21,936	18,822	6,297	516	5	18,799	7,641	3,603	1,339
31 Mexico										
32 Norway	2	4,343	9,235		74					
33 Peru	3	8,844	794		135					
34 Porto Rico	2	222	300		12	31	3,139	5,023		191
35 Portugal										
36 Roumania	4	9,412	8,540	9,107	149					
37 Russia						3	11,859	3,819		324
38 St. Pierre	41	3,306	5,948	132	199	52	5,460	7,806	881	285
39 San Domingo										
40 Sea Fisheries	51	6,007	1,500		1,177	302	17,945	6,810		4,139
41 Spain						1	1,453	2,088		27
42 Spanish Africa						2	722		1,521	14
43 Sweden										
44 Turkey										
45 United States	420	1,453,449	136,633	17,655	55,935	1,922	957,293	405,618	46,777	38,492
46 Uruguay	5	18,423	18,055	3,977	265					
47 Sea, Cable and Admiralty	14	16,352	717		1,177					
Total	2,387	5,576,450	4,610,350	833,178	158,275	3,033	1,632,644	1,111,411	238,091	67,357

SESSIONAL PAPER No. 11a

and Foreign, entered Outwards *for Sea.*

étrangers, *allant à la mer* entrés dans les ports du Canada.

RELEVÉ PAR PAYS.

In Ballast—Lèges.														
Foreign—Etrangers.					British—Britanniques.			Canadian—Canadiens.			Foreign—Etrangers.			
Vessels. — Navires.	Tons register. — Tonnage enregistré.	Freight, Tons weight. — Fret, poids, tonneaux	Freight, Tons measurement. — Fret, jaugeage, tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	No.
314	407,026	447,616	147,848	8,110	9	56,175	1,727	2	152	22	14	27,072	375	1
5	4,065	7,055	7,131	56	1	4,921	203	....	....	....	....	....	....	2
....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
7	17,464	11,642	7,290	196	....	....	....	....	....	....	....	....	....	4
....	....	....	....	....	....	....	....	....	....	....	....	....	....	5
12	10,490	14,000	703	287	....	....	....	1	1,452	31	1	1,367	36	6
....	....	....	....	....	1	2,613	39	....	....	....	....	....	....	7
1	2,232	1,156	714	30	....	....	....	....	....	....	....	....	....	8
30	73,739	122,186	....	1,028	....	....	....	....	....	....	....	....	....	9
63	52,052	65,130	281	1,380	58	157,436	2,571	41	29,766	668	17	7,398	282	10
....	....	....	....	....	....	....	....	....	....	....	....	....	....	11
9	10,287	4,128	8,700	115	....	....	....	....	....	....	....	....	....	12
1	340	600	....	7	....	....	....	....	....	....	....	....	....	13
10	26,223	45,200	....	412	....	....	....	....	....	....	....	....	....	14
2	3,638	1,565	7,311	58	....	....	....	....	....	....	....	....	....	15
....	....	....	....	....	....	....	....	....	....	....	....	....	....	16
4	4,415	982	581	107	1	2,676	44	....	....	....	....	....	....	17
8	24,384	17,337	....	499	5	33,516	661	19	119,361	8,068	10	47,536	958	18
7	5,689	5,150	521	115	1	2,756	24	....	....	....	1	509	8	19
6	6,679	13,947	....	149	....	....	....	....	....	....	....	....	....	20
102	190,377	298,052	45,794	3,979	....	....	....	1	105	12	16	5,113	390	21
1	1,433	150	....	28	....	....	....	....	....	....	....	....	....	22
....	....	....	....	....	....	....	....	....	....	....	....	....	....	23
1	1,896	3,000	....	33	....	....	....	....	....	....	....	....	....	24
33	77,685	161,047	918	1,115	....	....	....	....	....	....	....	....	....	25
....	....	....	....	....	....	....	....	....	....	....	2	359	24	26
....	....	....	....	....	....	....	....	1	156	18	....	....	....	27
46	101,391	184,648	....	751	1	4,154	59	....	....	....	....	....	....	28
18	56,536	100,395	1,767	813	....	....	....	....	....	....	....	....	....	29
18	80,310	40,370	7,244	1,440	....	....	....	....	....	....	17	103,810	2,899	30
....	....	....	....	....	1	2,492	40	4	5,566	99	36	166,416	1,339	31
18	33,263	52,674	396	492	....	....	....	....	....	....	1	8	12	32
....	....	....	....	....	1	2,948	37	....	....	....	....	....	....	33
....	....	....	....	....	....	....	....	....	....	....	....	....	....	34
2	486	....	1,209	12	....	....	....	....	....	....	3	240	27	35
6	11,373	15,108	2,514	201	....	....	....	....	....	....	....	....	....	36
1	5,115	2,991	....	78	....	....	....	....	....	....	....	....	....	37
55	11,636	14,382	....	1,152	....	....	....	6	896	34	5	1,029	133	38
....	....	....	....	....	....	....	....	....	....	....	6	8,279	186	39
493	26,570	12,515	....	7,147	109	11,728	2,255	1,672	58,516	13,352	1,837	73,427	20,030	40
3	3,765	560	451	71	....	....	....	....	....	....	....	....	....	41
....	....	....	....	....	....	....	....	....	....	....	....	....	....	42
2	3,248	3,597	....	53	....	....	....	....	....	....	....	....	....	43
2	4,760	6,200	....	67	....	....	....	....	....	....	....	....	....	44
3,268	1,434,612	705,344	81,694	52,262	201	426,312	12,975	1,429	544,832	17,949	2,257	1,411,461	44,878	45
1	2,029	1,900	....	43	....	....	....	....	....	....	....	....	....	46
13	5,698	....	....	578	2	1,030	88	2	92	25	3	705	105	47
4,562	2,700,906	2,360,627	323,067	82,864	391	708,757	20,723	3,178	760,894	40,278	4,226	1,854,729	71,682	

No. 7.—Statement of Vessels, British, Canadian and

N° 7.—Tableau des navires britanniques, canadiens et

RECAPITULATION—

	Vessels. Navires.	Tons register. Tonnage enregistré.	Freight, Tons weight. Fret, poids, tonneaux.	Freight, Tons measurement. Fret, jaugeage, tonneaux.	Crew. Equipage.
With Cargoes—Charges—					
British—Britanniques	2,387	5,576,450	4,610,350	833,178	158,275
Canadian—Canadiens	3,033	1,632,644	1,111,411	238,031	67,357
Foreign—Etrangers	4,562	2,700,906	2,360,627	323,067	82,864
Total	9,982	9,910,000	8,082,388	1,394,336	308,496

Foreign, entered Outwards *for Sea—Concluded.*

étrangers *allant à la mer,* entrés dans les ports du Canada—*Fin.*

RÉCAPITULATION.

—	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight. — Fret, poids, tonneaux.	Freight, Tons Measurement. — Fret, jaugeage, tonneaux.	Crew. — Equipage
In Ballast—Lèges—					
British—Britanniques	391	708,757			20,723
Canadian—Canadiens	3,178	760,894			40,278
Foreign—Etrangers	4,226	1,854,729			71,682
Total	7,795	3,324,380			132,683
Grand total	17,777	13,234,380	8,082,388	1,394,336	441,179

No. 8.— Summary Statement of Sea-going Vessels entered and cleared at each Port and Outport

RECAPITULATION BY PORTS AND OUTPORTS.

N° 8.—Etat sommaire des navires de long cours qui sont arrivés et partis à chaque port et port secondaire.

RÉCAPITULATION PAR PORT ET PORT SECONDAIRE.

Ports and Outports Ports et ports secondaires.	Vessels Arrived Navires entrés						Vessels Departed Navires sortis					
	British. Britanniques.		Foreign. Etrangers.		Total. Total.		British Britanniques.		Foreign. Etrangers.		Total. Total.	
	No. Nomb.	Tons. Tonneaux	No. Nomb.	Tons. Tonneaux	No. Nomb	Tons. Tonneaux	No Nomb.	Tons. Tonneaux	No Nomb	Tons. Tonneaux	No. Nomb	Tons. Tonneaux
Alert Bay, B.C.	1	91	103	8,570	104	8,661	17	4,685	103	8,526	120	13,211
Annapolis Royal, N.S.	8	732	7	1,003	15	1,735	2	442	3	18	5	460
Arichat, N.S.	82	1,731	4	241	86	1,972	87	1,551	4	225	91	1,776
Baddeck, N.S.	18	476	10	757	28	1,233	24	1,730	19	12,331	43	14,061
Barrington Passage, N.S.	10	337	26	1,949	36	2,286	14	243	28	488	42	731
Barton, N.S.							1	369			1	369
Bathurst, N.B.	3	5,598	1	1,235	4	6,833	3	5,508	6	4,487	9	10,085
Bear River, N.S.	2	190			2	190	4	524			4	524
Belliveau's Cove, N.S.							2	335			2	335
Bridgetown, N.S.	2	264			2	264						
Bridgewater, N.S.	3	368	9	4,368	12	4,736	9	2,449	7	4,032	16	6,481
Britannia Beach, B.C.	153	55,429	41	10,475	194	65,904	178	61,088	41	11,113	219	72,201
Butedale, B.C.	60	884	161	4,356	221	5,240	66	1,050	161	4,356	227	5,406
Campbellton, N.B.	7	13,021	2	1,951	9	14,972	13	20,737	6	6,038	19	26,775
Campo Bello, N.B.	153	23,004	303	7,725	456	30,819	165	24,618	47	437	212	25,055
Canso, N.S.	80	10,767	96	6,950	176	17,717	78	10,977	100	6,794	178	17,771
Carnquet, N.B.	145	2,126			145	2,126	151	2,160			151	2,160
Cardigan, P.E.I.							3	293			3	293
Charlottetown, P.E.I.	16	2,784	1	579	17	3,363	23	2,593	1	1,412	26	4,005
Chatham, N.B.	12	19,603	8	4,732	20	24,335	15	24,729	16	16,933	31	41,662
Chemainus, B.C.	20	1,809	48	1,532	68	3,341	26	18,647	57	16,141	83	34,791
Chester, N.S.	15	184	1	7	16	191	9	108	5	65	14	173
Chetlecamp, N.S.			1	100	1	100			1	100	1	100
Church Point, N.S.	1	123			1	123	1	727			1	727
Clarks Harbour, N.S.	10	235	30	675	40	910	10	309	34	497	44	806
Clementsport, N.S.	6	594			6	594	6	594			6	594
Dalhousie, N.B.	2	3,122	6	4,488	8	7,610	3	7,294	8	10,708	11	18,002
Digby, N.S.	8	3,153	1	331	9	3,484	16	5,550	3	24	19	5,574
Dorchester, N.B.			1	319	1	319			1	319	1	319
Freeport, N.S.	10	365			10	365	7	201			7	201
Gaspé, Que.	8	7,139	21	23,070	29	30,209	20	17,490	15	18,071	35	35,561
Georgetown, P.E.I.	10	740			10	740	10	470			10	470
Ghee Bay, N.S.	28	733			28	733	5	132			5	132
Halifax, N.S.	622	1,349,123	358	554,944	984	1,904,067	797	1,915,442	353	511,292	1,150	2,426,734
Hantsport, N.S.	14	19,539	4	6,657	18	26,196	2	3,194			2	3,194
Hillsboro, N.B.	5	4,605	3	524	8	5,129	10	10,657	6	1,043	16	11,700

Indian Island, N.B.		83	107	1,177	116	1,260	7	50	106	1,153	113	1,209
Isaac's Harbour, N.S.	1	71	8	876	9	947	3	530	7	339	10	869
Joggin Mines, N.S.			9	1,123	9	1,123	3	360	11	1,817	14	2,177
Ladner, B.C.	7	310	2	15	9	325	4	87	3	331	7	418
Ladysmith, B.C.	180	33,630	180	65,240	360	98,870	91	16,692	185	70,739	276	87,431
La Have, N.S.	88	11,732	8	680	96	12,412	92	10,434	9	503	101	10,937
Lévis, Que.	2	7,005			2	7,005	3	4,161			3	4,161
Liverpool, N.S.	40	2,008	141	10,227	187	13,135	94	11,141	158	16,164	252	27,305
Lockeport, N.S.	24	812	23	833	47	1,645	30	1,036	26	865	56	1,901
Lord's Cove, N.B.	176	1,393	94	1,131	270	2,524	115	875	94	1,048	209	1,923
Louisburg, N.S.	130	185,107	126	102,110	256	287,217	134	163,887	128	96,549	262	260,436
Lower East Pubnico, N.S.	26	1,121	39	1,582	65	2,703	21	933	42	1,611	63	2,544
Lunenburg, N.S.	318	31,016	28	1,991	346	33,007	297	26,483	27	1,864	324	28,347
Magdalen Islands, Que.	1	71			1	71						
Mahone Bay, N.S.	15	1,463			15	1,463	14	1,130			14	1,130
Meteghan River, N.S.							1	594			1	594
Moncton, N.B.	5	3,621	1	44	6	3,665	13	10,450	3	411	16	10,861
Montague Bridge, P.E.I.	3	227			3	227	9	626			9	626
Montmagny, Que.							1	1,353			1	1,353
Montreal, Que.	373	1,430,805	78	243,861	451	1,674,666	399	1,476,893	282	539,462	681	2,016,355
Murray Harbour, P.E.I.	4	80			4	80	4	81			4	81
Nanaimo, B.C.	151	22,911	732	172,812	883	194,823	326	64,605	786	239,071	1,112	303,676
Newcastle, N.B.	8	12,216	9	5,883	17	18,099	10	14,594	11	5,145	21	19,739
New Westminster, B.C.	4	231	2	428	6	659	6	10,465	11	13,053	17	23,518
North East Harbour, N.S.	2	46	3	482	5	528	3	59	3	106	6	165
North Head, N.B.	159	25,633	50	859	209	26,492	165	27,760	47	571	212	28,331
North Sydney, N.S.	822	294,014	234	108,412	1,056	402,426	613	258,960	283	175,246	896	434,206
Ocean Falls, B.C.	41	65,048	91	111,714	132	176,762	15	29,036	92	109,793	107	138,829
Parrsboro, N.S.	17	5,524	46	10,966	63	16,490	39	13,374	64	14,357	103	27,731
Paspebiac, Que.	1	1,141			1	1,141	9	3,097	5	5,622	14	8,719
Pictou, N.S.	6	2,449	6	1,704	12	4,153	14	7,664	5	1,585	19	9,249
Port Alberni, B.C.	5	697	3	172	8	869	9	589	3	3,117	12	3,706
Port Hastings, N.S.	1	187			1	187	2	1,443	17	3,265	19	4,708
Port Hawkesbury, N.S.	45	5,833	18	1,749	63	7,582	37	5,054	17	2,530	54	7,584
Port Hood, N.S.			2	147	2	147			2	147	2	147
Port La Tour, N.S.	1	66			1	66	1	10	2	62	3	72
Port Mulgrave, N.S.	2	230	1	65	3	295	3	1,772	16	6,117	19	7,889
Port Simpson, B.C.			10	3,595	10	3,595			10	3,595	10	3,595
Port Wade, N.S.	1	20			1	20	1	74			1	74
Powell River, B.C.	11	15,000	88	33,247	99	48,247	27	26,439	90	33,950	117	60,389
Prince Rupert, B.C.	733	71,148	989	38,151	1,722	109,299	771	66,371	982	46,835	1,753	113,206
Pugwash, N.S.							1	336			1	336
Quebec, Que.	169	736,824	20	39,995	189	776,819	141	368,815	51	73,612	192	442,427
Richibucto, N.B.	1	325	2	501	3	826						
Rimouski, Que.	13	21,294	5	2,614	18	23,908	13	21,294	5	2,614	18	23,908
River Hebert, N.S.			1	577	1	577			1	577	1	577
St. Andrews, N.B.	362	21,852	804	12,465	1,166	34,317	348	21,342	804	12,617	1,152	33,959
St. George, N.B.	10	63	108	6,957	118	7,020	15	402	100	7,033	124	7,435
St. John, N.B.	299	779,732	332	328,074	631	1,107,806	300	707,778	345	330,626	645	1,038,404
St. Martin's, N.B.	19	8,542	34	6,493	53	15,035	18	8,857	36	7,002	54	15,859
St. Peters, N.S.	3	350	19	2,046	22	3,302			17	2,623	17	2,623
St. Stephen, N.B.	6	206	71	1,832	77	2,038	8	235	72	1,212	80	1,447
Salmon River, N.S.	2	82	1	5	3	87	3	153			3	153
Sandy Cove, N.S.							1	15			1	15
Sandy Point, N.S.	8	707	113	9,534	121	10,241	5	1,085	103	7,687	108	8,772
Shediac, N.B.	1	1,681	1	193	2	1,874	1	224	2	417	3	641
Sheet Harbour, N.S.									1	449	1	449
Shelburne, N.S.	5	1,166	35	2,762	40	3,928	11	1,422	42	3,306	53	4,728
Sherbrooke, N.S.							2	232	2	752	4	984
Shippegan, N.B.	85	1,225	1	247	86	1,472	90	1,271	1	247	91	1,518

No. 8.—Summary Statement of Sea-going Vessels entered and cleared at each Port and Outport—*Concluded.*

RECAPITULATION BY PORTS AND OUTPORTS.

N° 8.—Etat sommaire des navires de long cours qui sont arrivés et partis à chaque port et port secondaire.—*Fin.*

RÉCAPITULATION PAR PORT ET PORT SECONDAIRE.

Ports and Outports. Ports et ports secondaires.	Vessels Arrived. Navires entrés.						Vessels Departed. Navires sortis.					
	British. Britanniques.		Foreign. Etrangers.		Total. Total.		British. Britanniques.		Foreign. Etrangers.		Total. Total.	
	No Nomb	Tons. Tonneaux	No Nomb	Tons. Tonneaux	No Nomb	Tons. Tonneaux	No Nomb	Tons. Tonneaux	No Nomb	Tons. Tonneaux	No Nomb	Tons. Tonneaux
Sidney, B.C	53	1,024	51	8,455	104	9,479	47	7,806	46	10,380	93	18,186
Sorel, Que							1	99	1	1,079	2	1,178
Souris, P.E.I	15	644	6	464	21	1,108	23	1,066	6	419	29	1,485
Steveston, B.C	95	2,058	145	3,800	240	5,858	83	1,620	146	3,859	229	5,479
Summerside, P.E.I	1	93			1	93						
Sydney, N.S	342	592,975	164	174,132	506	767,107	622	621,171	204	228,688	826	849,859
Three Rivers, Que	7	17,505	1	1,337	8	18,842	7	17,505	1	1,337	8	18,842
Truro, N.S			2	267	2	267						
Tusket, N.S	1	9	1	111	2	120	1	9	1	111	2	120
Union Bay, B.C	38	56,524	196	79,171	234	135,695	81	208,534	215	96,413	296	304,947
Vancouver, B.C	939	1,272,715	514	497,284	1,453	1,769,999	818	922,426	529	507,324	1,347	1,429,750
Victoria, B.C	920	748,223	1,250	925,247	2,170	1,673,470	966	1,287,388	1,242	962,034	2,168	2,249,422
Westport, N.S	9	380	38	722	47	1,102	6	104	34	646	40	750
Weymouth, N.S	11	1,102	1	92	12	1,194	13	1,920	2	296	15	2,216
White Rock, B.C	63	1,320	16	322	79	1,642	65	1,820	13	319	78	2,139
Windsor, N.S	43	41,267	28	17,563	71	58,830	64	62,719	35	28,465	99	91,184
Wolfville, N.S			4	578	4	578						
Yarmouth, N.S	64	5,081	227	239,937	291	245,018	73	5,543	210	231,015	283	236,558
Total	8,516	8,076,883	8,565	3,933,491	17,081	12,010,374	8,989	8,678,745	8,788	4,555,635	17,777	13,234,380

No. 9.—Statement of Nationalities of Sea-going Vessels entered and cleared.

ABSTRACT BY NATIONALITIES—RÉSUMÉ PAR NATIONALITÉ.

Arrived—Arrivés.			Departed—Partis.		
Flag—Pavillon.	Number. — Nombre.	Tons. — Tonneaux.	Flag—Pavillon.	Number. — Nombre.	Tons. — Tonneaux.
United Kingdom	8,516	8,076,883	United Kingdom	8,989	8,678,745
Austria	1	3,070	Austria	1	2,276
Belgium	2	5,102	Belgium	2	5,102
Brazil	13	38,062	Brazil	13	38,567
Cuba	1	1,492	Cuba	1	1,492
Denmark	65	36,692	Denmark	66	34,171
Finland	2	1,938	Finland	2	1,038
France	279	178,951	France	410	325,895
Germany	1	1,968	Germany	1	1,968
Greece	50	120,592	Greece	54	128,372
Holland	57	117,396	Hayti	1	197
Italy	52	145,968	Holland	54	123,139
Japan	107	551,030	Italy	39	111,152
Mexico	5	2,880	Japan	106	547,228
Norway	154	263,479	Mexico	6	3,796
Portugal	2	5,750	Norway	193	313,419
Roumania	4	7,600	Portugal	6	3,808
Russia	4	3,423	Roumania	3	5,570
Spain	2	2,031	Russia	4	3,423
Sweden	6	8,080	San Domingo	1	197
United States	7,758	2,437,987	Spain	1	1,896
			Sweden	4	5,102
			United States	7,815	2,890,190
			Unregistered	5	6,737
Total	17,081	12,010,374	Total	17,777	13,234,380

DESCRIPTION OF VESSELS—DESCRIPTION DES NAVIRES.

	Arrived—Arrivés.							Departed—Partis.						
	Steamers. — Vapeurs.		Sailing Vessels. — Voiliers.		Total. — Total.			Steamers. — Vapeurs.		Sailing Vessels. — Voiliers.		Total. — Total.		
	Number. — Nomb.	Tons. — Tonneaux.	Number. — Nomb.	Tons. — Tonneaux.	Number. — Nomb.	Tons. — Tonneaux.		Number. — Nomb.	Tons. — Tonneaux.	Number. — Nomb.	Tons. — Tonneaux.	Number. — Nomb.	Tons. — Tonneaux.	
British—Britanniques	6,428	7,812,437	2,088	264,446	8,516	8,076,883	British—Britanniques	6,653	8,366,343	2,336	312,402	8,989	8,678,745	
Foreign—Etrangers	7,066	3,597,369	1,499	336,122	8,565	3,933,491	Foreign—Etrangers	7,286	4,218,986	1,502	336,649	8,788	4,555,635	
Total	13,494	11,409,806	3,587	600,568	17,081	12,010,374	Total	13,939	12,585,329	3,838	649,051	17,777	13,234,380	

No. 10.—Summary Statement of Sea-going Vessels entered Inwards and Outwards.

N° 10.—État sommaire des navires de long cours entrés et sortis.

Nationalities. — Nationalités.	Sea-going Vessels, Inwards. — Navires de long cours entrés.					Sea-going Vessels, Outwards. — Navires de long courts sortis.					Total Sea-going Vessels, Inwards and Outwards. — Total, navires de long cours entrés et sortis.				
	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight — Fret poids tonneaux.	Freight, Tons measurement. — Fret jaugeage tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Freight, Tons Weight. — Fret poids tonneaux.	Freight, Tons measurement — Fret jaugeage tonneaux.	Crew. — Equipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Freight, Tons Weight. — Fret poids tonneaux.	Freight, Tons measurement. — Fret jaugeage tonneaux.	Crew. — Equipage
British—Britanniques	2,733	6,035,787	1,124,085	141,593	197,085	2,778	6,285,207	4,610,350	833,178	178,998	5,511	12,320,994	5,734,135	974,771	376,083
Canadian—Canadiens	5,783	2,041,096	436,489	135,246	98,866	6,211	2,393,538	1,111,411	238,091	107,635	11,994	4,434,634	1,547,900	373,337	206,501
Foreign—Étrangers	8,565	3,933,491	1,317,152	33,199	140,064	8,788	4,555,635	2,360,627	323,067	154,546	17,353	8,489,126	3,677,779	356,266	294,610
Total	17,081	12,010,374	2,877,726	310,038	436,015	17,777	13,234,380	8,082,388	1,394,336	441,179	34,858	25,244,754	10,960,114	1,704,374	877,194

No. 11.—Summary Statement of Vessels arrived and departed (exclusive of Coasting Vessels).

N° 11.—Etat sommaire des navires arrivés et partis (à l'exclusion des cabotiers).

Nationalities. Nationalités.	Sea-going Vessels, Inwards and Outwards. Navires de longs cours entrés et sortis.			Vessels of the Inland Waters between Canada and the United States. Naviguant dans les eaux intérieures entre le Canada et les Etats-Unis.			Total Shipping (Exclusive of Coasting Vessels) Inwards and Outwards. Grands totaux des navires (à l'exclusion cabotiers) entrés et sortis.		
	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipage.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipage.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipage.
British—Britanniques	5,511	12,320,994	376,083				5,511	12,320,994	376,083
Canadian—Canadiens	11,994	4,434,634	206,501	25,394	12,434,985	479,284	37,388	16,869,619	685,785
Foreign—Etrangers	17,353	8,489,126	294,610	35,474	11,813,794	384,740	52,827	20,302,920	679,350
Total	34,858	25,244,754	877,194	60,868	24,248,779	864,024	95,726	49,493,533	1,741,218

TRADE WITH EACH COUNTRY AND

No. 12.—STATEMENT of the Number and Tonnage of Steam and Sailing Vessels entered Inwards distinguishing the Nationality of the

COMMERCE AVEC CHAQUE PAYS

N° 12.—RELEVÉ du nombre et du tonnage des navires à voiles et à vapeur *venant de la mer* distinguant la nationalité des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.	British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Alert Bay, B.C.—										
United States (a)	1	91	103	8,570						
Annapolis Royal, N.S.—										
United States (a)	1	217								
United States (b)	7	515	7	1,003						
Total	8	732	7	1,003						
Arichat, N.S.—										
United States (b)	1	99	2	113						
Sea Fisheries (b)	81	1,632	2	128						
Total	82	1,731	4	241						
Baddeck, N.S.—										
Newfoundland (a)	1	47								
Newfoundland (b)	3	69								
United States (b)	3	172	6	420						
Sea Fisheries (b)	11	188	4	337						
Total	18	476	10	757						
Barrington Passage, N.S.—										
Spain (b)										
United States (a)			16	109						
United States (b)	2	154	2	712						
Sea Fisheries (a)	8	183								
Sea Fisheries (b)			7	993						
Total	10	337	25	1,814						
Bathurst, N.B.—										
Great Britain (a)	1	1,976								
French Africa (a)	1	1,848								
Italy (a)	1	1,774								
United States (b)					1	1,235				
Total	3	5,598			1	1,235				
Bear River, N.S.—										
United States (b)	2	190								
Bridgetown, N.S.—										
United States (b)	2	264								
Bridgewater, N.S.—										
British W. Indies (b)	1	100								
United States (b)	2	268	7	1,867	2	2,501				
Total	3	368	7	1,867	2	2,501				
Britannia Beach, B.C.—										
United States (a)	153	55,429	41	10,475						
Butedale, B.C.—										
United States (a)	3	22	81	2,227						
Sea Fisheries (a)	57	862	80	2,129						
Total	60	884	161	4,356						

(a) Steam—A vapeur. (b) Sail—A voiles.

NATIONALITY OF VESSELS.

from Sea at each of the undermentioned Ports and Outports in Canada from Foreign Countries, Vessels employed in the trade with each Country.

ET NATIONALITÉ DES NAVIRES.

entrés à chacun des ports et ports secondaires, sous-mentionnés au Canada, de pays étrangers, employés au commerce avec chaque pays.

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													104	8,661
													1	217
													14	1,518
													15	1,735
													3	212
													83	1,760
													86	1,972
													1	47
													3	69
													9	592
													15	525
													28	1,233
										Spanish	1	135	1	135
													16	109
													4	866
													8	183
													7	993
											1	135	36	2,286
													1	1,976
													1	1,848
													1	1,774
													1	1,235
													4	6,833
													2	190
													2	264
													1	100
													11	4,636
													12	4,736
													194	65,904
													84	2,249
													137	2,991
													221	5,240

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. Ports et ports secondaires et pays de départ.	British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
Campbellton, N.B.—										
Great Britain (a)	2	4,460			1	748				
Great Britain (b)	1	799								
Newfoundland (a)	1	2,984								
France (a)	1	2,471								
France (b)			1	1,203						
Italy (a)	1	2,253								
St. Pierre (b)	1	54								
Total	7	13,021	1	1,203	1	748				
Campo Bello, N.B —										
United States (a)	153	23,094	303	7,725						
Canso, N.S.—										
Great Britain (a)	1	170								
British W. Indies (b)	2	186								
Newfoundland (a)					1	715				
Newfoundland (b)	4	323	2	163						
United States (a)	1	77	14	990						
United States (b)	2	268	10	1,211						
Sea Fisheries (a)	46	8,460	55	2,804						
Sea Fisheries (b)	24	1,283	13	899						
Total	80	10,767	94	6,067	1	715				
Caraquet, N.B.—										
Sea Fisheries (b)	145	2,126								
Charlottetown, P.E.I.—										
British W. Indies (b)	3	549	1	579						
Newfoundland (a)	1	1,182								
Newfoundland (b)	9	558								
United States (b)	1	446								
Sea Fisheries (b)	2	49								
Total	16	2,784	1	579						
Chatham, N.B.—										
Great Britain (a)	9	14,740			1	1,131				
Great Britain (b)										
Newfoundland (a)	1	2,443								
France (a)	1	1,968								
Spain (b)	1	452								
United States (a)										
Denmark (b)										
Total	12	19,603			1	1,131				
Chemainus, B.C.—										
United States (a)	11	446	48	1,532						
United States (b)	9	1,363								
Total	20	1,809	48	1,532						
Chester, N.S.—										
United States (a)			1	7						
Sea Fisheries (a)	15	184								
Total	15	184	1	7						
Cheticamp, N.S.—										
United States (b)			1	100						
Church Point, N.S.—										
United States (b)	1	123								
Clarks Harbour, N.S.—										
United States (a)			30	675						
United States (b)	2	96								
Sea Fisheries (a)	8	139								
Total	10	235	30	675						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													3	5,208
													1	799
													1	2,984
													1	2,471
													1	1,203
													1	2,253
													1	54
													9	14,972
													456	30,819
													1	170
													2	186
													1	715
													6	486
													15	1,067
													12	1,479
		1	168										102	11,432
													37	2,182
		1	168										176	17,717
													145	2,126
													4	1,128
													1	1,182
													9	558
													1	446
													2	49
													17	3,363
1	928												11	16,799
1	207												1	207
													1	2,443
													1	1,968
													1	452
										Swedish	1	1,669	1	1,669
4	797												4	797
6	1,932										1	1,669	20	24,335
													59	1,978
													9	1,363
													68	3,341
													1	7
													15	184
													16	191
													1	100
													1	123
													30	675
													2	96
													8	139
													40	910

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. Ports et ports secondnires et pays de départ.		British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
		Ves. sels. Navi- res.	Tons Register. Tonnage enregistré.	Ves sels. Navi- res.	Tons Register. Tonnage enregistré.	Ves. sels. Navi- res.	Tons Register. Tonnage enregistré.	Ves. sels. Navi- res.	Tons. Register. Tonnage enregistré.	Ves. sels. Navi- res.	Tons Register. Tonnage enregistré.
Clements-port, N.S.—											
United States.	(b)	6	594								
Dalhousie, N.B.—											
Great Britain	(b)	1	799			1	1,070				
United States.	(b)					2	2,816				
French Africa	(a)	1	2,323								
Greenland, Iceland, etc	(a)										
Total		2	3,122			3	3,886				
Digby, N.S.—											
United States.	(a)	2	920	1	331						
United States.	(b)	6	2,233								
Total		8	3,153	1	331						
Dorchester, N.B.											
United States.	(b)			1	319						
Freeport, N.S.—											
United States.	(b)	10	365								
Gaspé, Que.—											
Great Britain	(a)	4	6,570								
Great Britain	(b)	2	186	1	495						
France	(a)					1	1,024				
Norway	(a)					1	2,547				
Portugal	(b)	1	284								
Spain	(a)			1	1,646						
Spain	(b)					1	195				
United States.	(a)			13	16,955						
United States.	(b)	1	99	3	208						
Total		8	7,139	18	19,304	3	3,766				
Georgetown, P.E.I.—											
Newfoundland	(b)	7	420								
United States.	(b)	1	294								
Sea Fisheries	(b)	2	26								
Total		10	740								
Glace Bay, N.S.—											
Great Britain	(a)	2	70								
Great Britain	(b)	21	531								
Newfoundland	(b)	1	40								
Sea Fisheries	(b)	4	92								
Total		28	733								
Halifax, N.S.—											
Great Britain	(a)	174	702,203	26	66,362	4	6,198				
Great Britain	(b)	6	2,342	2	1,956						
British W. Indies	(a)	32	82,433			7	5,138				
British W. Indies	(b)	22	3,885	1	276						
Newfoundland	(a)	89	49,133	3	1,340	6	6,753				
Newfoundland	(b)	28	2,064	1	75						
Belgium	(a)	1	3,325	3	8,888						
Brazil	(b)			1	449						
Cuba	(a)	4	5,691	5	6,663						
Cuba	(b)	1	111								
France	(a)	8	36,720	7	19,784	3	7,776			1	1,899
France	(b)	3	2,378	2	1,849						
Germany	(b)										
Holland	(a)	1	1,624	3	7,310						
Italy	(a)	1	2,727	1	2,543						
Norway	(a)					6	13,993				
Gibraltar	(a)	28	75,720	1	1,511	6	12,354				
Portugal	(a)	2	4,615	1	2,174						
Portugal	(b)			1	671						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant d la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
													6	594
2	391												4	2,260
													2	2,816
													1	2,323
1	211												1	211
3	602												8	7,610
													3	1,251
													6	2,233
													9	3,484
													1	319
													10	365
													4	6,570
													3	681
													1	1,024
													1	2,547
													1	284
													1	1,646
													1	195
													13	16,955
													4	307
													29	30,209
													7	420
													1	294
													2	26
													10	740
													2	70
													21	531
													1	40
													4	92
													28	733
		1	1,116							Grecian	2	4,218	207	780,097
1	171												9	4,469
													39	87,571
													23	4,161
3	3,294												101	60,520
													29	2,739
													4	12,213
													1	449
													9	12,354
													1	111
2	2,383									Grecian	1	3,172	23	75,233
										Brazilian	1	3,490		
								1	664				6	4,891
				1	1,968					Dutch	2	9,204	1	1,968
													6	18,138
						1	3,905						3	9,175
													6	13,993
2	4,664					20	54,387			Grecian	13	29,387	70	178,023
										Grecian	1	2,746	4	9,535
													1	671

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Halifax, N.S.—*Con.*											
Russia	(a)			1	2,256						
St. Pierre	(a)										
Spain	(a)	3	6,078	1	1,639						
Spain	(b)	1	428								
Sweden	(a)			1	2,772	1	2,527				
Sweden	(b)										
United States	(a)	118	300,280	35	64,307	12	15,924				
United States	(b)	17	4,504	32	12,497	2	1,981				
Sea, Cable and Admiralty	(a)	12	15,020	9	2,115						
San Domingo	(a)	1	1,045	4	5,567						
New Zealand	(a)	6	37,000								
British Honduras	(a)	1	2,688								
Honduras	(a)	2	833								
Sea Fisheries	(a)	36	3,836	33	2,208						
Sea Fisheries	(b)	25	1,831	10	837						
Mexico	(a)			20	106,108						
Total		622	1,349,123	204	322,157	47	72,644			1	1,899
Hantsport, N.S.—											
United States	(a)	1	888								
United States	(b)	13	18,651	4	6,657						
Total		14	19,539	4	6,657						
Hillsboro, N.B.—											
United States	(b)	5	4,605	3	524						
Indian Island, N.B.—											
United States	(a)	9	83	107	1,177						
Isaacs Harbour, N.S.—											
Newfoundland	(a)			1	74						
United States	(a)			3	257						
United States	(b)	1	71	1	376						
Sea Fisheries	(a)			2	35						
Sea Fisheries	(b)			1	134						
Total		1	71	8	876						
Joggins Mines, N.S.—											
United States	(b)			9	1,123						
Ladner, B.C.—											
United States	(a)	7	310	2	15						
Ladysmith, B.C.—											
United States	(a)	82	11,416	99	38,726						
United States	(b)	98	22,214	81	26,514						
Total		180	33,630	180	65,240						
La Have, N.S.—											
Great Britain	(b)	1	446								
British W. Indies	(b)	24	4,284								
Newfoundland	(b)	1	361								
Portugal	(b)	1	373								
St. Pierre	(b)	1	77								
Spain	(b)	2	759								
United States	(a)			5	331						
United States	(b)	2	463								
Virgin Islands of U.S.A.	(b)	1	116								
Sea Fisheries	(a)	3	221	3	349						
Sea Fisheries	(b)	52	4,628								
Total		88	11,732	8	680						
Levis, Que.—											
Great Britain	(a)	2	7,005								

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
...	...	...	...	...	...	...	...	...	...	...	...	...	1	2,256
...	...	17	3,550	...	...	1	2,883	...	...	...	...	...	17	3,550
...	...	...	...	...	...	...	...	...	...	...	...	...	5	10,600
1	193	...	...	...	...	...	...	...	...	...	...	...	2	621
12	2,049	...	...	...	...	...	...	1	128	Swedish	2	1,141	15	3,318
2	2,196	4	6,924	...	...	...	...	...	...	Brazilian	1	3,523	2	5,299
...	...	...	...	...	...	...	...	...	...	Dutch	1	2,324	174	397,557
...	...	...	...	...	...	...	...	...	...	Grecian	1	2,079	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	51	18,982
...	...	5	5,580	...	...	...	...	...	...	...	...	...	26	22,715
...	...	...	...	...	...	...	...	...	...	...	...	...	5	6,612
...	...	...	...	...	...	...	...	...	...	...	...	...	6	37,000
...	...	...	...	...	...	...	...	...	...	...	...	...	1	2,688
...	...	...	...	...	...	...	...	...	...	...	...	...	2	833
3	315	3	590	...	...	...	...	...	...	...	...	...	75	6,949
...	...	...	...	...	...	...	...	...	...	...	...	...	35	2,668
...	...	...	...	...	...	...	...	...	...	...	...	...	20	106,108
26	15,265	30	17,760	1	1,968	22	61,175	2	792	...	25	61,284	980	1,904,067
...	...	...	...	...	...	...	...	...	...	...	...	...	1	888
...	...	...	...	...	...	...	...	...	...	...	...	...	17	25,308
...	...	...	...	...	...	...	...	...	...	...	...	...	18	26,196
...	...	...	...	...	...	...	...	...	...	...	...	...	8	5,129
...	...	...	...	...	...	...	...	...	...	...	...	...	116	1,260
...	...	...	...	...	...	...	...	...	...	...	...	...	1	74
...	...	...	...	...	...	...	...	...	...	...	...	...	3	257
...	...	...	...	...	...	...	...	...	...	...	...	...	2	447
...	...	...	...	...	...	...	...	...	...	...	...	...	2	35
...	...	...	...	...	...	...	...	...	...	...	...	...	1	134
...	...	...	...	...	...	...	...	...	...	...	...	...	9	947
...	...	...	...	...	...	...	...	...	...	...	...	...	9	1,123
...	...	...	...	...	...	...	...	...	...	...	...	...	9	325
...	...	...	...	...	...	...	...	...	...	...	...	...	181	50,142
...	...	...	...	...	...	...	...	...	...	...	...	...	179	48,728
...	...	...	...	...	...	...	...	...	...	...	...	...	360	98,870
...	...	...	...	...	...	...	...	...	...	...	...	...	1	446
...	...	...	...	...	...	...	...	...	...	...	...	...	24	4,284
...	...	...	...	...	...	...	...	...	...	...	...	...	1	365
...	...	...	...	...	...	...	...	...	...	...	...	...	1	373
...	...	...	...	...	...	...	...	...	...	...	...	...	1	77
...	...	...	...	...	...	...	...	...	...	...	...	...	2	759
...	...	...	...	...	...	...	...	...	...	...	...	...	5	331
...	...	...	...	...	...	...	...	...	...	...	...	...	2	463
...	...	...	...	...	...	...	...	...	...	...	...	...	1	116
...	...	...	...	...	...	...	...	...	...	...	...	...	6	570
...	...	...	...	...	...	...	...	...	...	...	...	...	52	4,628
...	...	...	...	...	...	...	...	...	...	...	...	...	96	12,412
...	...	...	...	...	...	...	...	...	...	...	...	...	2	7,005

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Liverpool, N.S.—											
Newfoundland	(a)			1	71						
Newfoundland	(b)	2	182	1	75						
Spain	(b)	1	466								
United States	(a)	2	129	51	3,319						
United States	(b)	1	50	11	2,066						
Sea Fisheries	(a)	40	2,081	70	4,001						
Sea Fisheries	(b)			6	532						
Total		46	2,908	140	10,064						
Lockeport, N.S.—											
United States	(b)			12	140						
Sea Fisheries	(b)	24	812	11	693						
Total		24	812	23	833						
Lord's Cove, N.B.—											
United States	(a)	176	1,393	94	1,131						
Louisburg, N.S.—											
Great Britain	(a)	14	48,053	1	1,654						
Newfoundland	(a)	42	33,201								
Newfoundland	(b)	14	969	6	541						
Belgium	(a)	2	6,737								
France	(a)	3	7,376			4	10,611				
Germany	(a)			3	705						
Holland	(a)	1	4,688								
Italy	(a)	4	12,487			1	2,265				
Norway	(a)					1	1,327				
St. Pierre	(a)										
St. Pierre	(b)	8	700	1	75						
Spain	(a)										
United States	(a)	21	36,149	3	1,811						
United States	(b)	1	72	5	458						
Gibraltar	(a)	6	18,628								
New Zealand	(a)	2	11,787								
Argentina	(a)	1	3,155								
British South Africa	(a)										
Sea Fisheries	(a)	2	382								
Sea Fisheries	(b)	9	723	66	2,377						
Total		130	185,107	85	7,801	6	14,203				
Lower East Pubnico, N.S.—											
United States	(a)	2	53	23	615						
United States	(b)	10	504	10	611						
Sea Fisheries	(b)	14	564	6	356						
Total		26	1,121	39	1,582						
Lunenburg, N.S.—											
British W. Indies	(b)	55	7,103								
Newfoundland	(b)	1	98								
France	(b)	2	505								
United States	(b)	8	856	2	174						
French West Indies	(b)	1	350								
Sea Fisheries	(a)	37	1,497	26	1,817						
Sea Fisheries	(b)	214	20,607								
Total		318	31,016	28	1,991						
Magdalen Islands, Que.—											
United States	(b)	1	71								
Mahone Bay, N.S.—											
British W. Indies	(b)	3	483								
United States	(b)	2	199								
Sea Fisheries	(b)	10	781								
Total		15	1,463								

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
													1	71
													3	257
													1	466
													53	3,448
		1	163										12	2,116
													111	6,245
													6	532
		1	163										187	13,135
													12	140
													35	1,505
													47	1,645
													270	2,524
		1	2,362							Dutch	1	1,590	17	53,659
								1	237	Dutch	1	1,246	44	34,684
													20	1,510
													2	6,737
										Brazilian	2	6,191	9	24,178
													3	705
										Dutch	5	11,693	6	16,381
						6	15,933						11	30,685
		1	90										1	1,327
													1	90
													9	775
						2	5,798			Dutch	2	1,353	4	7,151
1	1,350									Dutch	3	10,308	31	57,642
										Grecian	3	8,024	6	510
						1	2,264						7	20,892
													2	11,787
													1	3,155
						4	11,581						4	11,581
		1	86										3	468
													75	3,300
1	1,350	3	2,538			13	35,576	1	237		17	40,405	256	287,217
													25	668
													20	1,115
													20	920
													65	2,703
													55	7,103
													1	98
													2	505
													10	1,030
													1	350
													63	3,314
													214	20,607
													346	33,007
													1	71
													3	483
													2	199
													10	781
													15	1,463

No. 12.—STATEMENT of the number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Moncton, N.B.—											
Great Britain	(a)	1	3,230								
Great Britain	(b)	3	165								
British W. Indies	(b)	1	226								
United States	(b)			1	44						
Total		5	3,621	1	44						
Montague Bridge, P.E.I.—											
Newfoundland	(b)	3	227								
Montreal, Que.—											
Great Britain	(a)	265	1,127,716			4	8,255				
Newfoundland	(a)	3	7,614								
Belgium	(a)	10	39,197								
Cuba	(a)	9	13,252								
France	(a)	11	32,269			1	2,556				
Mexico	(a)	3	4,172	19	80,892						
Holland	(a)	3	12,480								
Italy	(a)	20	59,302			1	3,458	1	3,070		
Norway	(a)					2	6,068				
Greece	(a)	2	6,504								
Argentina	(a)	1	3,549								
Russia	(a)	1	1,998								
Gibraltar	(a)	28	76,564								
Spain	(a)	2	6,051								
United States	(a)	10	28,074	1	212	1	2,204				
Austria	(a)	2	6,414								
Hayti	(a)	1	1,045								
Turkey	(a)	2	4,604								
Roumania	(a)										
Total		373	1,430,805	20	81,104	9	22,541	1	3,070		
Murray Harbour, P.E.I.—											
Sea Fisheries	(b)	4	80								
Nanaimo, B.C.—											
United States	(a)	116	11,737	447	76,586	1	2,232				
United States	(b)	33	5,354	280	89,472						
Japan	(a)	1	4,908								
Sea Fisheries	(a)	1	12	3	68						
Total:		151	22,011	730	166,126	1	2,232				
Newcastle, N.B.—											
Great Britain	(a)	5	8,244			4	4,955				
France	(a)	1	1,526								
Italy	(a)	1	1,295								
Portugal	(a)	1	1,151								
Denmark	(b)										
Total		8	12,216			4	4,955				
New Westminster B.C.—											
United States	(a)	4	231	2	428						
North East Harbour, N.S.—											
United States	(a)			1	44						
United States	(b)			2	438						
Sea Fisheries	(a)	1	13								
Sea Fisheries	(b)	1	33								
Total		2	46	3	482						
North Head, N.B.—											
United States	(a)	159	25,633	50	859						

(a) Steam—A vapeur. (b) Sail—A voiles.

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
													1	3,230
													3	165
													1	226
													1	44
													6	3,665
													3	227
		2	4,658							Brazilian	2	5,700	276	1,154,051
										Grecian	2	5,822		
										Roumanian	1	1,900		
													3	7,614
													10	39,197
													9	13,252
		10	36,999							Brazilian	5	14,664	29	90,676
										Grecian	1	1,934		
										Swedish	1	2,254		
													22	85,064
													3	12,480
		1	2,667			4	12,553			Brazilian	1	2,182	28	83,232
													2	6,068
										Grecian	7	18,249	9	24,753
													1	3,549
													1	1,998
2	4,753	2	5,443			3	6,963			Grecian	1	2,090	36	95,813
													2	6,051
										Grecian	1	2,780	14	36,905
										Dutch	1	3,635		
													2	6,414
													1	1,045
													2	4,604
										Roumanian	1	1,900	1	1,900
2	4,753	15	49,767			7	19,516				24	63,110	451	1,674,666
													4	80
										Japanese	1	4,454	565	95,009
													313	94,826
													1	4,908
													4	80
											1	4,454	883	194,823
													9	13,199
													1	1,526
													1	1,295
													1	1,151
5	928												5	928
5	928												17	18,099
													6	659
													1	44
													2	438
													1	13
													1	33
													5	528
													209	26,492

No. 12.—STATEMENT showing the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.
North Sydney, N.S.—											
Great Britain	(a)	24	68,842	3	4,770	4	5,736				
Great Britain	(b)					1	926				
British W. Indies	(a)	2	2,907								
Newfoundland	(a)	345	158,060	4	4,264	6	15,678				
Newfoundland	(b)	362	26,521	1	81						
France	(a)	6	15,276	1	1,604	3	6,574				
France	(b)	1	397	1	484						
Italy	(a)	2	4,698								
Norway	(a)					2	3,098				
Saint Pierre	(a)			1	235						
Saint Pierre	(b)	55	4,433								
Spain	(a)	1	2,194								
Spain	(b)	1	190								
United States	(a)	2	6,343	9	12,492	1	3,172				
United States	(b)	3	271	3	267						
Greece	(a)	1	2,912			1	3,541				
Greenland, Iceland, etc	(b)					2	358				
Sea Fisheries	(a)			10	1,725						
Sea Fisheries	(b)	17	970	20	1,240						
Total		822	294,014	53	27,162	20	39,083				
Ocean Falls, B.C.—											
United States	(a)	41	65,048	91	111,714						
Parrsboro, N.S.—											
Great Britain	(a)	1	594								
Great Britain	(b)	4	1,849								
United States	(a)	2	434	18	5,958						
United States	(b)	10	2,647	27	3,842	1	1,166				
Total		17	5,524	45	9,800	1	1,166				
Paspebiac, Que.—											
United States	(a)	1	1,141								
Pictou, N.S.—											
Great Britain	(b)	1	363								
Newfoundland	(a)	1	1,023								
Newfoundland	(b)	3	974								
Belgium	(b)			1	634						
France	(b)			1	487						
United States	(b)	1	89	1	119						
Greenland, Iceland, etc	(b)										
Total		6	2,449	3	1,240						
Port Alberni, B.C.—											
United States	(a)	5	697	3	172						
Port Hastings, N.S.—											
Newfoundland	(a)	1	187								
Port Hawkesbury, N.S.—											
Great Britain	(b)	1	458								
British W. Indies	(b)	3	694								
Newfoundland	(a)	1	60								
Newfoundland	(b)	12	850								
United States	(a)			8	585						
United States	(b)			5	477						
Sea Fisheries	(a)	21	3,178	3	523						
Sea Fisheries	(b)	7	593	2	164						
Total		45	5,833	18	1,749						
Port Hood, N.S.—											
Sea Fisheries	(b)			2	147						
Port La Tour, N.S.—											
Sea Fisheries	(b)	1	66								

(a) Steam—A vapeur. (b) Sail—voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.
		1	2,182							Grecian	3	7,576	35	89,106
													1	926
													2	2,907
										Dutch	1	8	356	178,010
										Dutch	1	99	364	26,701
													40	23,454
		1	128										3	1,009
													2	4,698
													2	3,048
		74	13,155										75	13,390
		1	260										56	4,693
													1	2,194
													1	190
		1	3,436										13	25,443
													6	538
										Grecian	1	2,291	3	8,744
										Dutch	3	500	5	858
		69	11,938										79	13,663
		5	594										42	2,804
		152	31,693								9	10,474	1,056	402,426
													132	176,762
													1	594
													4	1,849
													20	6,392
													38	7,655
													63	16,490
													1	1,141
													1	363
													1	1,023
													3	974
													1	634
													1	487
													2	208
3	464												3	464
3	464												12	4,153
													8	869
													1	187
													1	458
													3	694
													1	60
													12	850
													8	585
													5	477
													24	3,701
													9	757
													63	7,582
													2	147
													1	66

No. 12.—STATEMENT of the number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.	British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Port Mulgrave, N.S.—										
United States (b)			1	65						
Sea Fisheries (a)	2	230								
Total	2	230	1	65						
Port Simpson, B.C.—										
United States (a)			10	3,595						
Port Wade, N.S.—										
United States (b)	1	20								
Powell River, B.C.—										
Australia (a)	3	9,047								
United States (a)	8	5,953	88	33,247						
Total	11	15,000	88	33,247						
Prince Rupert, B.C.—										
United Statse (a)	69	61,058	110	22,459						
United States (b)			5	669						
Sea Fisheries (a)	664	10,090	874	15,023						
Total	733	71,148	989	38,151						
Quebec, Que.—										
Great Britain (a)	131	695,732			3	5,152				
British W. Indies (b)	1	330	3	1,485						
Newfoundland (a)	16	2,689								
Newfoundland (b)	8	628								
Belgium (a)	1	6,442								
France (a)	2	4,621			4	5,966				
Holland (a)										
Italy (a)	2	5,342								
Norway (a)					1	1,954				
Portugal (a)	1	2,001								
Gibraltar (a)	6	16,544								
Malta (a)	1	2,495								
Total	169	736,824	3	1,485	8	13,072				
Richibucto, N.B.—										
Newfoundland (b)	1	325								
Denmark (b)										
Total	1	325								
Rimouski, Que.—										
Great Britain (a)	13	21,294								
Great Britain (b)					1	997				
Spain (b)					1	1,079				
Total	13	21,294			2	2,076				
River Hebert, N.S.—										
Great Britain (b)			1	577						
St. Andrews, N.B.—										
United States (a)	362	21,852	802	12,170						
United States (b)			2	295						
Total	362	21,852	804	12,465						
St. George, N.B.—										
United States (a)	1	4	53	1,681						
United States (b)	9	59	55	5,276						
Total	10	63	108	6,957						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													1	65
													2	230
													3	295
													10	3,595
													1	20
													3	9,047
													96	39,200
													99	48,247
													179	83,517
													5	669
													1,538	25,113
													1,722	109,299
													134	700,884
													4	1,815
													16	2,689
													8	628
													1	6,442
		5	17,071							Brazilian	1	2,312	12	29,970
		1	1,883										1	1,883
													2	5,342
													1	1,954
													1	2,001
										Grecian	2	4,172	8	20,716
													1	2,495
		6	18,954								3	6,484	189	776,819
2	501												1	325
													2	501
2	501												3	826
3	538												13	21,294
													4	1,535
													1	1,079
3	538												18	23,908
													1	577
													1,164	34,022
													2	295
													1,166	34,317
													54	1,685
													64	5,335
													118	7,020

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.	British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
St. John, N.B.—										
Great Britain.....(a)	117	495,454			1	1,259				
Great Britain.....(b)	1	295								
British W. Indies.....(a)	26	72,478								
British W. Indies.....(b)	6	1,795	4	1,836						
Newfoundland.....(a)	2	2,576	1	1,621						
Belgium.....(a)	10	46,776								
British South Africa..(a)										
British South Africa.....(b)	1	452								
Cuba.....(a)	8	13,316	4	9,950	1	657				
France.....(a)	5	14,778								
Germany.....(a)			2	8,036						
Gibraltar.....(a)	24	66,040								
Italy.....(a)	4	10,896			1	2,266				
Norway.....(a)					1	2,756				
Portugal.....(a)	1	2,288								
Greece.....(a)										
Spain.....(a)	1	2,389								
Spain.....(b)			2	1,754						
United States.....(a)	37	45,782	151	194,015	3	4,377			1	3,203
United States.....(b)	49	3,869	117	15,444	1	1,062				
San Domingo.....(a)			9	10,208						
San Domingo.....(b)	1	410	2	889						
Greenland, Iceland, etc.....(b)										
Sea Fisheries.....(a)	1	46								
Sea Fisheries.....(b)	5	162								
Total.....	299	779,732	292	243,753	8	12,377			1	3,203
St. Martins, N.B.—										
United States.....(a)			23	1,817						
United States.....(b)	19	8,542	11	4,676						
Total.....	19	8,542	34	6,493						
St. Peters, N.S.—										
Newfoundland.....(b)	2	339								
United States.....(b)			2	250						
Sea Fisheries.....(a)			17	2,696						
Sea Fisheries.....(b)	1	17								
Total.....	3	356	19	2,946						
St. Stephen, N.B.—										
United States.....(a)	6	206	66	760						
United States.....(b)			5	1,072						
Total.....	6	206	71	1,832						
Salmon River, N.S.—										
United States.....(b)	1	71	1	5						
Sea Fisheries.....(b)	1	11								
Total.....	2	82	1	5						
Sandy Point, N.S.—										
British W. Indies.....(b)	4	443								
Newfoundland.....(b)	1	99	3	278						
United States.....(b)	2	153	73	6,727						
Sea Fisheries.....(b)	1	12	37	2,529						
Total.....	8	707	113	9,534						
Shediac, N.B.—										
Great Britain.....(a)	1	1,681								
British W. Indies.....(b)										
Total.....	1	1,681								

(a) Steam—A vapeur.. (b) Sail—A voiles.

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													118	496,713
1	150									Finnish	2	1,938	4	2,383
													26	72,478
													10	3,631
													3	4,197
													10	46,706
						2	5,682						2	5,682
													1	452
										Cuban	1	1,492	14	25,415
		4	16,920										9	31,698
													2	8,036
										Grecian	3	7,726	27	73,766
						4	11,758			Grecian	1	1,889	10	26,809
													1	2,756
										Portuguese	1	2,875	2	5,163
										Grecian	2	4,382	2	4,382
						1	3,554			Swedish	1	1,118	3	7,061
													2	1,754
						1	2,276			Swedish	1	1,898	195	255,810
										Japanese	1	4,259		
													167	20,375
													9	10,208
													3	1,299
5	824												5	824
													1	46
													5	162
6	974	4	16,920			8	23,270				13	27,577	631	1,107,806
													23	1,817
													30	13,218
													53	15,035
													2	339
													2	250
													17	2,696
													1	17
													22	3,302
													72	966
													5	1,072
													77	2,038
													2	76
													1	11
													3	87
													4	443
													4	377
													75	6,880
													38	2,541
													121	10,241
1	193												1	1,681
													1	193
1	193												2	1,874

No. 12.—Statement of the Number and Tonnage of Steam

N° 12.—Relevé du nombre et du tonnage des navires

Ports and Outports and Countries whence arrived. Ports et ports secondaires et pays de départ.	British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons. Register. Tonnage enregistré.	Vessels. Navires.	Tons. Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
Shelburne, N.S.—										
Great Britain (b)	2	974								
United States (b)	1	73	25	1,969						
Sea Fisheries (b)	2	119	10	793						
Total	5	1,166	35	2,762						
Shippegan, N.B.—										
Spain (b)										
Sea Fisheries (a)	13	144								
Sea Fisheries (b)	72	1,081								
Total	85	1,225								
Sidney, B.C.—										
United States (a)	52	841	42	6,233						
United States (b)	1	183	9	2,222						
Total	53	1,024	51	8,455						
Souris, P.E.I.—										
Newfoundland (b)	3	144								
United States (b)			2	138						
Sea Fisheries (b)	12	500	4	326						
Total	15	644	6	464						
Steveston, B.C.—										
United States (a)	93	1,986	126	3,345						
United States (b)	1	45	16	382						
Sea Fisheries (a)	1	27	3	73						
Total	95	2,058	145	3,800						
Summerside, P.E.I.—										
United States (b)	1	93								
Sydney, N.S.—										
Great Britain (a)	53	130,877			6	1,471				
Newfoundland (a)	145	255,595	14	18,510	1	254				
Newfoundland (b)	51	4,186								
Belgium (a)	3	7,771								
France (a)	3	7,218			3	6,952				
Holland (a)	2	6,974	1	4,618						
Italy (a)	8	20,974								
Norway (a)					2	3,421				
Portugal (a)	4	8,057								
St. Pierre (a)	8	1,253								
St. Pierre (b)	14	1,234								
Spain (a)	2	7,299								
United States (a)	13	41,766	5	7,588	7	13,328				
Mexico (a)	1	2,183								
Sea, Cable and Admiralty (a)			1	235						
Gibraltar (a)	31	88,611								
New Zealand (a)	1	6,099								
Roumania (a)	1	2,668								
Chili (a)										
British South Africa (a)										
Sea Fisheries (a)	1	191	5	857						
Sea Fisheries (b)	1	19	17	370						
Total	342	592,975	43	32,178	19	25,426				
Three Rivers, Que.—										
Great Britain (a)	7	17,505			1	1,337				

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
Navires.	Tonnage enregistré.	Navires.	Tonnage enregistré.	Navires.	Tonnage enregistré.	Navires.	Tonnage enregistré.	Navires.	Tonnage enregistré.	Noms.	Navires.	Tonnage enregistré.	Navires.	Tonnage enregistré.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	974
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	2,042
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	912
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	3,928
1	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	247
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	144
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72	1,081
1	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	86	1,472
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	94	7,074
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	2,405
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	104	9,479
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	144
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	138
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16	826
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	1,108
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	219	5,331
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	427
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	100
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	240	5,858
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	93
1	1,338	1	128	.....	.....	.....	.....	.....	.....	{Dutch	3	4,864}		
										{Grecian	1	3,677}	66	144,255
										{Roumanian	1	1,900}		
.....	.....	.....	.....	.....	.....	.....	.....	1	2,394	.....	.....	.....	161	276,753
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	51	4,186
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	7,771
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Portuguese	1	2,875	7	17,045
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Dutch	25	51,197	28	62,789
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	20,974
1	1,350	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	4,771
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	8,057
.....	.....	30	3,868	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	5,121
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	1,234
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	7,299
3	3,872	.....	.....	.....	.....	.....	.....	.....	.....	{Dutch	5	9,990}		
										{Grecian	2	4,358}	36	83,298
										{Spanish	1	1,896}		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2,153
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	235
1	2,385	.....	.....	.....	.....	2	6,431	.....	.....	{Grecian	1	2,000}	36	101,417
										{Roumanian	1	1,900}		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	6,099
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2,688
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Japanese	1	5,045	1	5,045
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Dutch	1	1,857	1	1,857
.....	.....	19	2,613	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	3,661
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	389
6	8,945	50	6,609	.....	.....	2	6,431	1	2,394	.....	43	92,149	506	767,107
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	18,842

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre de tonnage des navires

Ports and Outports and Countries whence arrived. / Ports et ports secondaires et pays de départ.		British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
		Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
Truro, N.S.—											
United States	(a)	...	...	2	267	...	...	...	...	...	...
Tusket, N.S.—											
Sea Fisheries	(b)	1	9	1	111	...	...	...	...	...	...
Union Bay, B.C.—											
United States	(a)	27	30,645	72	14,014	...	...	...	...	...	...
United States	(b)	5	2,743	120	50,080	...	...	...	...	...	...
China	(a)	2	6,392	...	...	...	...	...	...	...	...
Japan	(a)	4	16,744	...	...	...	...	...	...	...	...
Total		38	56,524	192	64,094	...	...	...	...	...	...
Vancouver, B.C.—											
Great Britain	(a)	9	31,770	...	...	...	...	...	...	...	...
Australia	(a)	16	78,882	...	...	...	...	...	...	...	...
Australia	(b)	...	...	1	994	...	...	...	...	...	...
China	(a)	29	165,189	...	...	...	...	...	...	...	...
Japan	(a)	16	38,621	...	...	2	3,833	...	...	...	...
Japan	(b)	...	...	1	861	...	...	...	...	...	...
Hawaii	(a)	1	3,841	1	221	...	...	...	...	...	...
Cuba	(a)	...	...	...	...	...	...	...	...	...	...
Peru	(a)	7	20,029	14	47,062	5	4,833	...	...	...	...
British Straits Settlements	(a)	5	21,770	...	...	...	...	...	...	...	...
Philippines	(a)	1	2,804	...	...	...	...	...	...	...	...
Mexico	(a)	...	...	1	3,379	...	...	...	...	...	...
Fiji Islands	(a)	...	...	1	1,391	...	...	...	...	...	...
Dutch East Indies	(a)	...	...	...	...	...	...	...	...	...	...
Russia	(a)	4	14,895	...	...	...	...	...	...	...	...
United States	(a)	751	889,336	405	283,733	9	29,719	...	...	...	...
United States	(b)	...	...	5	4,799	...	...	...	...	...	...
Sea Fisheries	(a)	100	5,578	29	1,209	...	...	...	...	...	...
Total		939	1,272,715	458	343,649	16	38,385	...	...	...	...
Victoria, B.C.—											
Great Britain	(a)	9	37,670	...	...	...	...	...	...	...	...
Australia	(a)	10	65,664	...	...	...	...	...	...	...	...
British Straits Settlements	(a)	1	7,172	1	1,450	...	...	...	...	...	...
China	(a)	27	172,455	...	...	...	...	...	...	...	...
Japan	(a)	...	...	...	...	...	...	...	...	...	...
Russia	(a)	4	19,734	...	...	...	...	...	...	...	...
United States	(a)	730	422,732	1,140	464,955	...	...	...	...	...	...
United States	(b)	131	22,520	24	5,680	...	...	...	...	...	...
Sea Fisheries	(a)	8	276	...	...	...	...	...	...	...	...
Total		920	748,223	1,165	472,085	...	...	...	...	...	...
Westport, N.S.—											
United States	(a)	6	104	...	...	...	...	...	...	...	...
United States	(b)	3	276	38	722	...	...	...	...	...	...
Total		9	380	38	722	...	...	...	...	...	...
Weymouth, N.S.—											
United States	(b)	11	1,102	1	92	...	...	...	...	...	...
White Rock, B.C.—											
United States	(a)	63	1,320	16	322	...	...	...	...	...	...
Windsor, N.S.—											
United States	(a)	13	10,873	4	3,108	...	...	...	...	...	...
United States	(b)	30	30,394	24	14,455	...	...	...	...	...	...
Total		43	41,267	28	17,563	...	...	...	...	...	...

(a) Steam—A vapeur. (b) Sail—A voiles.

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

à voiles et à vapeur, *venant de la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Registr. Tonnage enregistré.	Vessels. Navires.	Tons Registr. Tonnage enregistré.	Vessels. Navires.	Tons Registr. Tonnage enregistré.	Vessels. Navires.	Tons Registr. Tonnage enregistré.	Vessels. Navires.	Tons Registr. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Registr. Tonnage enregistré.	Vessels. Navires.	Tons Registr. Tonnage enregistré.
													2	267
													2	120
										Japanese	4	15,077	103	59,736
													125	52,823
													2	6,392
													4	16,744
											4	15,077	234	135,695
													9	31,770
													16	78,882
													1	994
										Japanese	2	12,022	31	177,211
										Japanese	9	34,142	27	76,396
													1	861
													2	4,062
		1	2,292										1	2,292
													26	71,924
													5	21,770
													1	2,804
													1	3,379
													1	1,391
										Dutch	2	7,528	2	7,528
													4	14,895
		15	30,436							Grecian	1	1,430	1,191	1,262,054
										Japanese	6	25,096		
										Mexican	4	2,304		
													5	4,799
													129	6,787
		16	32,728								24	82,522	1,453	1,769,999
													9	37,670
													10	65,664
										Japanese	1	5,993	3	14,615
										Japanese	17	84,027	44	256,482
										Japanese	27	158,496	27	158,496
													4	19,734
		1	1,651							Japanese	38	202,419	1,910	1,092,333
										Mexican	1	576		
													155	28,200
													8	276
		1	1,651								84	451,511	2,170	1,673,470
													6	104
													41	998
													47	1,102
													12	1,194
													79	1,642
													17	13,981
													54	44,849
													71	58,830

No. 12.—STATEMENT of the Number and Tonnage of Steam

N° 12.—RELEVÉ du nombre de tonnage des navires

Ports and Outports and Countries whence arrived. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register. — Tonnage enregistré	Vessels. — Navires.	Tons Register. — Tonnage enregistré	Vessels. — Navires.	Tons Register. — Tonnage enregistré	Vessels. — Navires.	Tons Register. — Tonnage enregistré	Vessels. — Navires.	Tons Register. — Tonnage enregistré
Wolfville, N.S.—											
United States	(b)			4	578						
Yarmouth, N.S.—											
British W. Indies	(b)	4	1,180								
Portugal	(b)	1	347								
United States	(a)	11	609	124	233,040						
United States	(b)	11	1,409	63	3,981						
Sea Fisheries	(a)	20	782	10	630						
Sea Fisheries	(b)	17	754	30	2,286						
Total		64	5,081	227	239,937						

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Concluded.*

à voiles et à vapeur, *venant de la mer, etc.—Fin.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	578
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1,180
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	347
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	135	233,649
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	74	5,390
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	1,412
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47	3,040
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	291	245,018

No. 13.—Summary Statement of the Nationality of Sea-

N° 13.—Tableau sommaire des nationalités des

No.	Countries from which arrived / Pays de départ.	British / Britannique.		United States / Américaine.		Norwegian. / Norvégienne.		Austrian. / Autrichienne.		Belgian. / Belge.	
		Vessels. / Navires.	Tons Register. / Tonnage enregistré.	Vessels. / Navires.	Tons Register. / Tonnage enregistré.	Vessels. / Navires.	Tons Register. / Tonnage enregistré.	Vessels. / Navires.	Tons Register. / Tonnage enregistré.	Vessels. / Navires.	Tons Register. / Tonnage enregistré.
1	United Kingdom	889	3,435,063	34	75,814	32	39,235				
2	Australia	29	153,593	1	994						
3	British South Africa	1	452								
4	British Honduras	1	2,688								
5	British West Indies	189	179,076	9	4,176	7	5,138				
6	British Straits Settlements	6	28,942	1	1,450						
7	Fiji Islands			1	1,391						
8	Gibraltar	123	342,107	1	1,511	6	12,354				
9	Malta	1	2,495								
10	Newfoundland	1,165	556,775	38	27,093	14	23,400				
11	New Zealand	9	54,886								
12	Argentina	2	6,704								
13	Austria	2	6,414								
14	Belgium	27	110,178	4	9,522						
15	Brazil			1	449						
16	Chili										
17	China	58	344,036								
18	Cuba	22	32,370	9	16,613	1	657				
19	Denmark										
20	Dutch East Indies										
21	France	47	127,512	13	25,411	19	41,459			1	1,899
22	French Africa	2	4,171								
23	French West Indies	1	350								
24	Germany			5	8,741						
25	Greece	3	9,416			1	3,541				
26	Greenland, Iceland, etc					2	358				
27	Hawaii	1	3,841	1	221						
28	Hayti	1	1,045								
29	Holland	7	25,766	4	11,928						
30	Hoaduras	2	833								
31	Italy	44	121,748	1	2,543	3	7,989	1	3,070		
32	Japan	21	60,273	1	861	2	3,833				
33	Mexico	4	6,355	40	190,379						
34	Norway					16	35,164				
35	Peru	7	20,029	14	47,062	5	4,833				
36	Philippines	1	2,804								
37	Portugal	12	19,116	2	2,845						
38	Roumania	1	2,668								
39	Russia	9	36,627	1	2,256						
40	St. Pierre	87	7,751	2	310						
41	San Domingo	2	1,455	15	16,664						
42	Sea Fisheries	1,845	78,180	1,472	51,599						
43	Spain	15	26,306	4	5,039	2	1,274				
44	Sweden			1	2,772	1	2,527				
45	Turkey	2	4,604								
46	United States	3,865	2,245,118	6,073	1,927,993	43	81,717			1	3,203
47	Virgin Islands of U.S.A.	1	116								
48	Sea, Cable and Admiralty	12	15,020	10	2,350						
	Total	8,516	8,076,883	7,758	2,437,987	154	263,479	1	3,070	2	5,102

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going Vessels entered Inwards *from Sea*, from each Country.

navires de chaque pays, *venant de la mer*.

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalities.			Total. Total.		
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Name of flag. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	No.
										Brazilian	2	5,700			
										Dutch	4	6,454			
10	3,723	6	10,446							Finnish	2	1,938	989	3,603,466	1
										Grecian	8	21,293			
										Roumania a	2	3,800			
													30	154,587	2
						6	17,263			Dutch	1	1,857	8	19,572	3
													1	2,688	4
1	193												206	188,583	5
										Japanese	1	5,993	8	36,385	6
													1	1,391	7
										Grecian	20	45,465			
5	11,802	2	5,443			26	70,045			Roumania a	1	1,900	184	490,627	8
													1	2,495	9
3	3,294							2	2,631	Dutch	3	1,353	1,225	614,546	10
													9	54,886	11
													2	6,704	12
													2	6,414	13
													31	119,700	14
													1	449	15
										Japanese	1	5,045	1	5,045	16
										Japanese	19	96,049	77	440,085	17
		1	2,292							Cuban	1	1,492	34	53,424	18
11	2,226												11	2,226	19
										Dutch	2	7,528	2	7,528	20
										Brazilian	9	26,657			
										Grecian	2	5,106			
2	2,383	20	71,118					1	664	Portugese	1	2,875	116	307,338	21
										Swedish	1	2,254			
													2	4,171	22
				1	1,968								1	350	23
													6	10,709	24
9	1,499									Grecian	10	24,922	14	37,879	25
										Dutch	3	500	14	2,357	26
													2	4,062	27
													1	1,045	28
		1	1,883							Dutch	32	72,094	44	111,671	29
													2	833	30
		1	2,667			15	44,149			Brazilian	1	2,182			
										Grecian	1	1,889	67	186,237	31
										Japanese	36	192,638	60	257,605	32
													44	196,734	33
1	1,350												17	36,514	34
													26	71,924	35
													1	2,804	36
										Grecian	1	2,746			
										Portug'ese	1	2,875	16	27,582	37
										Roumania a	1	1,900	2	4,568	38
													10	38,883	39
		123	20,923										212	28,984	40
													17	18,119	41
3	315	99	16,152										3,419	146,246	42
										Dutch	2	1,353			
2	440					4	12,235			Spanish	1	135	31	47,900	43
										Swedish	1	1,118			
12	2,049							1	128	Swedish	2	1,141	17	8,617	44
													2	4,604	45
										Brazilian	1	3,523			
										Dutch	10	26,257			
										Grecian	8	19,171			
6	7,418	21	42,447			1	2,276			Japanese	50	251,305	10087	4,618,771	46
										Mexican	5	2,880			
										Spanish	1	1,896			
										Swedish	2	3,567			
													1	116	47
		5	5,580										27	22,950	48
65	36,692	279	178,951	1	1,968	52	145,968	4	3,423		249	856,851	17,081	12,010,374	

TRADE WITH EACH COUNTRY

No. 14—STATEMENT of the Number and Tonnage of Steam and Sailing Vessels entered outwards distinguishing the Nationality of the

COMMERCE AVEC CHACUN DES PAYS

N° 14—ETAT du nombre et du tonnage des vaisseaux à voiles et à vapeur *allant à la mer*, entrés lité des vaisseaux employés pour le commerce

Ports and Outports and Countries for which Departed. / Ports et ports secondaires et pays de départ.	British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.
Alert Bay, B.C.—										
United States (a)	17	4,685	101	8,472						
Sea Fisheries (a)			2	54						
Total	17	4,685	103	8,526						
Annapolis Royal, N.S.—										
Newfoundland (a)	1	60								
Cuba (b)	1	352								
United States (b)			3	18						
Total	2	442	3	18						
Arichat, N.S.—										
Newfoundland (b)			1	82						
United States (a)			1	15						
Sea Fisheries (a)			2	128						
Sea Fisheries (b)	87	1,551								
Total	87	1,551	4	225						
Baddeck, N.S.—										
Great Britain (b)			2	335						
Newfoundland (a)	1	47								
Newfoundland (b)	9	547	1	16						
United States (a)			7	11,276						
United States (b)	7	1,045	5	370						
Sea Fisheries (b)	7	91	4	334						
Total	24	1,730	19	12,331						
Barrington Passage, N.S.—										
United States (a)			23	207						
Sea Fisheries (a)	14	243								
Sea Fisheries (b)			5	281						
Total	14	243	28	488						
Barton, N.S.—										
Cuba (b)	1	369								
Bathurst, N.B.—										
Great Britain (a)	3	5,598								
Great Britain (b)			2	1,098						
Cuba (b)			2	993						
Argentina (b)			1	1,161	1	1,235				
Total	3	5,598	5	3,252	1	1,235				
Bear River, N.S.—										
United States (b)	4	524								
Belliveau Cove, N.S.—										
British W. Indies (b)	1	282								
United States (b)	1	53								
Total	2	335								
Bridgewater, N.S.—										
British W. Indies (b)	1	99								
Newfoundland (b)	2	315								
Argentina (b)					2	2,501				
Cuba (b)	2	904	1	398						
Azores and Madeira (b)	3	782	1	340						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

AND NATIONALITY OF VESSELS.

for Sea, at each of the undermentioned Ports and Outports in Canada, for foreign countries, Vessels employed in the trade with each country.

ET NATIONALITÉ DES VAISSEAUX.

à chacun des ports et ports secondaires mentionnés ci-après, à destination étrangère, avec nationa- avec chaque pays.

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.
													118	13,157
													2	54
													120	13,211
													1	60
													1	382
													3	18
													5	460
													1	82
													1	15
													2	128
													87	1,551
													91	1,776
													2	335
													1	47
													10	563
													7	11,276
													12	1,415
													11	425
													43	14,061
													23	207
													14	243
													5	281
													42	731
													1	369
													3	5,598
													2	1,098
													2	993
													2	2,396
													9	10,085
													4	524
													1	282
													1	53
													2	335
													1	99
													2	315
													2	2,501
													3	1,302
													4	1,122

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register — Tonnage enregistré.	Vessels. — Navires	Tons register — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.
Bridgewater, N.S.—*Con.*											
Canary Islands	(a)	1	349								
United States	(b)			3	793						
Total		9	2,449	5	1,531	2	2,501				
Britannia Beach, B.C.—											
United States	(a)	178	61,088	41	11,113						
Butedale, B.C.—											
United States	(b)	1	9	44	2,145						
Sea Fisheries	(b)	65	1,041	117	2,211						
Total		66	1,050	161	4,356						
Campbellton, N.B.—											
Great Britain	(a)	8	19,289			1	748				
Great Britain	(b)	1	211			3	2,876				
British W. Indies	(b)	1	238								
Newfoundland	(b)	2	200								
Argentina	(b)			1	1,203						
French Africa	(b)	1	799								
Total		13	20,737	1	1,203	4	3,624				
Campo Bello, N.B.—											
United States	(a)	165	24,618	47	437						
Canso, N.S.—											
British W. Indies	(b)	1	93								
Newfoundland	(a)			2	142						
Newfoundland	(b)	1	113	2	196						
United States	(a)	1	122	7	486						
United States	(b)	6	664	4	334						
Sea Fisheries	(a)	47	8,688	61	3,514						
Sea Fisheries	(b)	22	1,297	19	1,282						
Total		78	10,977	95	5,954						
Caraquet, N.B.—											
Sea Fisheries	(b)	151	2,160								
Cardigan, P.E.I.—											
Newfoundland	(b)	3	293								
Charlottetown, P.E.I.—											
Newfoundland	(a)	3	1,409	1	1,412						
Newfoundland	(b)	18	1,027								
Sea Fisheries	(b)	4	157								
Total		25	2,593	1	1,412						
Chatham, N.B.—											
Great Britain	(a)	14	24,404			3	3,351				
Great Britain	(b)	1	325								
Spain	(b)										
United States	(a)			7	11,289						
Total		15	24,729	7	11,289	3	3,351				
Chemainus, B.C.—											
Great Britain	(a)	4	14,970								
United States	(a)	14	513	47	872						
United States	(b)	7	1,112								
British Oceania	(a)	1	2,052								
British South Africa	(a)			1	1,946						
Total		26	18,647	48	2,818						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Names. — Noms	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.
													1	349
													3	793
													16	6,481
													219	72,201
													45	2,154
													182	3,252
													227	5,406
													9	20,037
													4	3,087
													1	238
													2	200
1	1,211												2	2,414
													1	799
1	1,211												19	26,775
													212	25,055
													1	93
													2	142
													3	309
													8	608
													10	998
		5	840										113	13,042
													41	2,579
		5	840										178	17,771
													151	2,160
													3	293
													4	2,821
													18	1,027
													4	157
													26	4,005
										Swedish	1	1,169	18	28,924
4	946												5	1,271
1	178												1	178
													7	11,289
5	1,124										1	1,169	31	41,662
		9	13,326										13	28,296
													61	1,385
													7	1,112
													1	2,052
													1	1,946
		9	13,326										83	34,791

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. Ports et ports secondaires et pays de départ.	British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
Chester, N.S.—										
United States (a)			5	65						
Sea Fisheries (a)	9	108								
Total	9	108	5	65						
Chetiecamp, N.S.—										
United States (b)			1	100						
Church Point, N.S.—										
United States (b)	1	727								
Clarks Harbour, N.S.—										
United States (a)			34	497						
United States (b)	2	116								
Sea Fisheries (a)	8	193								
Total	10	309	34	497						
Clementsport, N.S.—										
United States (b)	6	594								
Dalhousie, N.B.—										
Great Britain (a)	3	7,294								
Great Britain (b)										
United States (a)			7	10,519						
Total	3	7,294	7	10,519						
Digby, N.S.—										
British W. Indies (b)	4	1,115								
United States (b)	12	4,435	3	24						
Total	16	5,550	3	24						
Dorchester, N.B.—										
United States (b)			1	319						
Freeport, N.S.—										
United States (b)	7	201								
Gaspé, Que.—										
Great Britain (a)	9	15,032			1	2,547				
British W. Indies (b)	2	241								
France (a)					1	1,025				
St. Pierre (b)	2	198								
United States (a)	1	142	9	12,828						
United States (b)	6	1,877	3	238						
Total	20	17,490	12	13,066	2	3,572				
Georgetown, P.E.I.—										
Newfoundland (b)	8	444								
Sea Fisheries (b)	2	26								
Total	10	470								
Glace Bay, N.S.—										
Newfoundland (b)	1	40								
Sea Fisheries (b)	4	92								
Total	5	132								
Halifax, N.S.—										
Great Britain (a)	144	533,363	4	15,768	1	1,262				
Great Britain (b)	17	8,675	10	8,155	3	3,749				
British W. Indies (a)	2	2,046	3	4,322	8	5,872				
British W. Indies (b)	14	2,383								
Newfoundland (a)	79	33,898	2	1,414	8	6,608				
Newfoundland (b)	53	5,852	5	421						
Belgium (a)	1	2,665	1	3,376						
New Zealand (a)	1	5,714								

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
													5	65
													9	108
													14	173
													1	100
													1	727
													34	497
													2	116
													8	193
													44	806
													6	594
1	189												3	7,294
													1	189
													7	10,519
1	189												11	18,002
													4	1,115
													15	4,459
													19	5,574
													1	319
													7	201
													10	17,579
													2	241
													1	1,025
													2	198
		1	1,433										11	14,403
													9	2,115
		1	1,433										35	35,561
													8	444
													2	26
													10	470
													1	40
													4	92
													5	132
1	262									Grecian	1	1,927	151	552,582
13	2,307							3	1,029	Swedish	1	917	47	24,832
													13	12,240
													14	2,383
													89	41,920
													58	6,273
													2	6,043
													1	5,71

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Halifax, N.S.—*Con.*											
Brazil	(a)	1	2,249								
Brazil	(b)	3	758	1	735						
Cuba	(a)	11	17,398	1	1,660	1	629				
Cuba	(b)	6	1,036								
France	(a)	13	34,292	3	7,674	3	7,261				
France	(b)	1	439								
British Guiana	(a)	29	78,732								
British Guiana	(b)	4	646								
Holland	(a)	4	13,662	1	4,259						
Uruguay	(a)	1	4,741	1	2,029						
Italy	(a)			2	7,188						
Hayti	(a)	1	156								
Norway	(a)					2	3,811				
Greece	(a)			1	3,283						
Porto Rico	(b)	13	1,346								
Portugal	(a)										
Argentina	(a)	1	3,549								
Argentina	(b)	1	332								
St. Pierre	(a)	1	227								
St. Pierre	(b)	7	953								
Spain	(a)			1	1,263						
Greenland, Iceland, etc	(a)										
Greenland, Iceland, etc	(b)	1	88								
Turkey	(a)					1	3,146				
United States	(a)	162	1,107,480	93	167,243	18	30,396			1	1,899
United States	(b)	16	4,296	6	1,623						
Mexico	(a)	4	6,664	16	85,298						
Gibraltar	(a)	1	3,381	1	2,501						
French West Indies	(b)	5	753								
Bermuda	(a)	3	4,464								
San Domingo	(a)			2	3,036						
Azores and Madeira	(a)	2	3,362								
French Africa	(a)										
Sea Fisheries	(a)	86	7,131	31	2,315						
Sea Fisheries	(b)	93	6,267	15	1,043						
Sea, Cable and Admiralty	(a)	16	16,444	10	2,350						
Total		797	1,915,442	210	326,956	45	62,734			1	1,899
Hantsport, N.S.—											
United States	(b)	2	3,194								
Hillsboro, N.B.—											
United States	(b)	10	10,657	6	1,043						
Indian Island, N.B.—											
United States	(a)	7	56	106	1,153						
Isaacs Harbour, N.S.—											
Newfoundland	(b)	2	453								
United States	(a)	1	77	3	104						
Sea Fisheries	(a)			1	134						
Sea Fisheries	(b)			3	101						
Total		3	530	7	339						
Joggia Mines, N.S.—											
United States	(b)	3	360	11	1,817						
Ladner, B.C.—											
United States	(a)	4	87	3	331						
Total		4	87	3	331						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
													1	2,249
													3	1,493
													13	19,687
													6	1,036
		3	6,439							Brazilian	1	3,523	23	59,189
													1	439
													29	78,732
													4	646
													3	17,921
													2	6,770
													2	7,188
													1	156
													2	3,811
													1	3,283
													13	1,346
										Portuguese	3	240	3	240
													1	3,549
													1	332
		17	3,555										18	3,782
													7	953
										Dutch	1	2,324	2	3,587
1	105												1	105
													1	88
													1	3,146
6	9,246	4	2,605			15	42,341			San Domingo	1	197	310	1,391,812
										Grecian	8	21,201		
										Dutch	2	9,204		
				1	1,968					Portuguese	1	431	24	8,318
													20	91,962
										Grecian	2	3,968	4	9,850
													5	753
													3	4,464
													2	3,036
													2	3,362
		1	1,433										1	1,433
2	210	6	923										125	10,579
													105	7,310
		3	3,348										29	22,142
23	12,130	34	18,303	1	1,968	15	42,341	3	1,029		21	43,932	1,150	2,426,734
													2	3,194
													16	11,700
													113	1,209
													2	453
													4	181
													1	134
													3	101
													10	869
													14	2,177
													7	418
													7	418

No. 14.—STATEMENT showing the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. / Ports et ports secondaires et pays de départ.	British. / Britannique.		United States. / Américaine.		Norwegian. / Norvégienne.		Austrian. / Autrichienne.		Belgian. / Belge.	
	Vessels. / Navires.	Tons register / Tonnage enregistré.	Vessels. / Navires.	Tons register. / Tonnage enregistré.	Vessels. / Navires.	Tons register / Tonnage enregistré.	Vessels. / Navires.	Tons register / Tonnage enregistré.	Vessels. / Navires.	Tons register. / Tonnage enregistré.
Ladysmith, B.C.—										
Russia (a)	1	3,953								
United States (a)	41	4,142	108	46,837						
United States (b)	49	8,597	77	23,902						
Total	91	16,692	185	70,739						
La Have, N.S.—										
British W. Indies (b)	2	247								
Newfoundland (b)	5	930	1	101						
Cuba (b)	1	349								
St. Pierre (b)	1	332								
United States (a)			5	53						
United States (b)	1	365								
Azores and Madeira (b)	1	329								
Canary Islands (b)	1	343								
Sea Fisheries (a)	4	592	3	349						
Sea Fisheries (b)	76	6,947								
Total	92	10,434	9	503						
Levis, Que.—										
United States (a)	3	4,161								
Liverpool, N.S.—										
Great Britain (a)	1	1,398								
British W. Indies (b)	1	295								
Newfoundland (a)	1	110	1	71						
Newfoundland (b)	5	535	1	96						
United States (a)	6	1,481	13	719						
United States (b)	9	3,191	27	7,767						
Sea Fisheries (a)	51	2,079	107	6,651						
Sea Fisheries (b)	20	2,052	8	697						
Total	94	11,141	157	16,001						
Lockeport, N.S.										
United States (b)			15	172						
Sea Fisheries (b)	30	1,036	11	693						
Total	30	1,036	26	865						
Lord's Cove, N.B.—										
United States (a)	115	875	94	1,048						
Louisburg, N.S.—										
Great Britain (a)	16	47,090			1	1,396				
Newfoundland (a)	35	20,138	1	169						
Newfoundland (b)	16	2,275	7	632						
Belgium (a)	1	3,038								
France (a)	1	2,685			4	8,351				
Germany (a)	1	2,704								
Holland (a)										
Norway (a)					2	3,945				
St. Pierre (b)	2	173								
United States (a)	22	52,051	1	1,654	1	1,327				
United States (b)	1	88			11	1,151				
British South Africa (a)	4	17,208			4	11,419				
Gibraltar (a)	4	12,636								
Sea, Cable and admiralty (a)	1	46	3	705						
Roumania (a)			1	1,621						
Sea Fisheries (a)	15	2,658								
Sea Fisheries (b)	15	1,097	65	2,434						
Total	134	163,887	78	7,215	23	27,589				

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards *for Sea etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.
													1	3,953
													149	50,979
													126	32,499
													276	87,431
													2	247
													6	1,031
													1	349
													1	332
													5	53
													1	365
													1	329
													1	343
													7	941
													76	6,947
													101	10,937
													3	4,161
													1	1,398
													1	295
													2	181
													6	631
													19	2,300
													36	10,958
		1	163										159	8,893
													28	2,749
		1	163										252	27,305
													15	172
													41	1,729
													56	1,901
													209	1,923
													17	48,486
													36	20,307
													23	2,907
													1	3,038
													5	11,036
													1	2,704
										Dutch	12	28,862	12	28,862
													2	3,945
													2	173
1	1,521					7	18,488						32	75,041
													12	1,239
													8	28,627
										Grecian	5	12,671	9	25,307
													4	751
													1	1,621
1	105	1	98										17	2,861
													80	3,531
2	1,626	1	98			7	18,488				17	41,533	262	260,436

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.	British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne		Belgian. — Belge.	
	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register — Tonnage enregistré.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Vessels. — Navires.	Tons register — Tonnage enregistré.
Lower East Pubnico, N.S.—										
United States (a)			22	262						
United States (b)	7	392	1	79						
Sea Fisheries (a)	2	35	4	383						
Sea Fisheries (b)	12	506	15	887						
Total	21	933	42	1,611						
Lunenburg, N.S.—										
Newfoundland (b)	13	1,592								
Cuba (b)	1	465								
France (b)	1	351								
Porto Rico (b)	19	1,925								
St. Pierre (b)	1	100								
United States (b)	2	199	1	47						
Canary Islands (b)	1	330								
French West Indies (b)	1	97								
Sea Fisheries (a)	41	1,295	26	1,817						
Sea Fisheries (b)	217	20,129								
Total	297	26,483	27	1,864						
Mahone Bay, N.S.—										
Newfoundland (b)	1	233								
Porto Rico (b)	1	90								
United States (b)	1	95								
Sea Fisheries (a)	1	10								
Sea Fisheries (b)	10	702								
Total	14	1,130								
Meteghan River, N.S.—										
United States (b)	1	594								
Moncton, N.B.—										
Great Britain (a)	4	8,579								
Great Britain (b)	2	1,355								
United States (a)	1	57								
United States. (b)	6	459	3	411						
Total	13	10,450	3	411						
Montague Bridge, P.E.I.										
Newfoundland (b)	9	626								
Montmagny, Que.—										
Great Britain (a)	1	1,353								
Montreal, Que.—										
Great Britain (a)	288	1,159,847	35	55,203	2	3,634				
British W. Indies (a)	8	12,178								
Newfoundland (a)	9	12,139	12	18,808						
Belgium (a)	16	68,405			2	4,926				
Brazil (a)										
Cuba (a)	7	9,556								
France (a)	25	67,962	6	8,882	2	4,455				
British South Africa (a)	7	26,026								
Holland (a)	4	18,918	1	1,693						
Italy (a)	3	10,252			1	3,458				
Norway (a)					2	6,068				
Greece (a)	7	18,962	5	8,131						
Australia (a)	5	23,466								
Gibraltar (a)	4	12,733								
Spain (a)	1	1,453								
United States (a)	7	9,745	145	202,583						
Argentina (a)	5	19,146								
Roumania (a)	2	4,711	2	4,182						
Mexico (a)	1	1,394	17	73,991						
Turkey (a)			1	1,614						
Total	399	1,476,893	224	375,087	9	22,541				

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards *for Sea etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.	Names. Noms	Vessels. Navires.	Tons register Tonnage enregistré.	Vessels. Navires.	Tons register. Tonnage enregistré.
													22	262
													8	471
													6	418
													27	1,393
													63	2,544
													13	1,592
													1	165
													1	351
													19	1,925
													1	100
													3	246
													1	330
													1	97
													67	3,112
													217	20,129
													324	28,347
													1	233
													1	90
													1	95
													1	10
													10	702
													14	1,130
													1	594
													4	8,579
													2	1,355
													1	57
													9	870
													16	10,861
													9	626
													1	1,353
2	4,753	6	17,306										333	1,240,743
													8	12,178
													21	30,947
										Brazilian	1	2,999	19	76,330
										Brazilian	1	2,903	1	2,903
													7	9,556
		9	33,010							Brazilian	7	19,967	49	134,276
													7	26,026
										Holland	1	3,635	6	24,246
						5	15,593						9	29,303
													2	6,068
										Grecian	12	30,875	24	57,968
													5	23,466
						2	5,223						6	17,956
													1	1,453
													152	212,328
													5	19,146
										Roumanian	3	5,570	7	14,463
													18	75,385
													1	1,614
2	4,753	15	50,316			7	20,816				25	65,949	681	2,016,353

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.
Murray Harbour, P.E.I.—											
Sea Fisheries	(b)	4	81								
Nanaimo, B.C.—											
Great Britain	(a)	2	8,409								
United States	(a)	175	33,085	303	87,047	1	3,014				
United States	(b)	102	18,589	281	87,993						
British Straits Settlements	(a)					1	2,232				
Japan	(a)										
Sea Fisheries	(a)	47	3,922	164	3,997						
Total		326	64,005	748	179,037	2	5,246				
Newcastle, N.B.—											
Great Britain	(a)	10	14,594			3	3,673				
Great Britain	(b)					1	178				
Total		10	14,594			4	3,851				
New Westminster, B.C.—											
Great Britain	(a)	4	10,358								
United States	(a)	2	107	2	428						
Total		6	10,465	2	428						
North East Harbour, N.S.—											
United States	(a)			2	62						
Sea Fisheries	(a)	2	26	1	44						
Sea Fisheries	(b)	1	33								
Total		3	59	3	106						
North Head, N.B.—											
United States	(a)	165	27,760	47	571						
North Sydney, N.S.—											
Great Britain	(a)	22	45,481	45	70,609	2	4,478				
Newfoundland	(a)	360	170,399	6	5,741	5	13,065				
Newfoundland	(b)	174	11,902	5	417						
Belgium	(a)	1	2,794	2	5,721	1	2,204				
Cuba	(a)	1	1,453								
France	(a)	1	2,848	3	4,588	3	8,226				
France	(b)	4	1,850								
Norway	(a)	2	4,343	1	1,604	3	3,186				
Saint-Pierre	(a)			1	235						
Saint-Pierre	(b)	23	2,036								
United States	(a)	7	14,434	7	10,901	4	5,559				
United States	(b)	3	279	1	176						
Greenland, Iceland, etc	(a)					1	254				
Greece	(a)										
Sea Fisheries	(a)	15	1,141	13	2,224						
Sea Fisheries	(b)			21	1,350						
Total		613	258,960	105	103,566	19	36,972				
Ocean Falls, B.C.—											
United States	(a)	11	18,762	88	109,049						
United States	(b)			4	744						
British Oceania	(a)	4	10,274								
Total		15	29,036	92	109,793						
Parrsboro, N.S.—											
Great Britain	(a)	2	3,093								
Great Britain	(b)	15	6,880			1	1,166				
France	(b)	1	272								
United States	(a)	1	217	20	6,501						
United States	(b)	20	2,912	43	6,690						
Total		39	13,374	63	13,191	1	1,166				

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Nav.-res.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													4	81
		23	41,070										25	49,479
		12	9,264										491	132,410
													383	106,582
													1	2,232
										Japanese	1	4,454	1	4,454
													211	7,919
		35	50,334								1	4,454	1,112	303,076
													13	18,267
7	1,294												8	1,472
7	1,294												21	19,739
		9	12,625										13	22,983
													4	535
		9	12,625										17	23,518
													2	62
													3	70
													1	33
													6	165
													212	28,331
													69	120,568
1	8												372	189,213
2	252												181	12,571
													4	10,719
													1	1,453
		23	4,782							Brazilian	1	2,701	31	23,145
													4	1,850
1	8												7	9,141
		29	6,278										30	6,513
		1	132										24	2,168
										Grecian.	1	2,079	19	32,973
													4	455
													1	254
										Grecian.	2	3,202	2	3,202
		96	15,158										124	18,523
		2	108										23	1,458
4	268	151	26,458								4	7,982	896	434,206
													99	127,811
													4	744
													4	10,274
													107	138,829
													2	3,093
													16	8,046
													1	272
													21	6,718
													63	9,602
													103	27,731

No. 14.—Statement of the Number and Tonnage of Steam

N° 14.—Tableau du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. Ports et ports secondaires et pays de départ.		British. Britannique.		United States. Américaine.		Norwegian Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
		Vessels. Navires.	Tons Register Tonnage enregistré.	Vessels. Navires.	Tons Register Tonnage enregistré.	Vessels. Navires.	Tons Register Tonnage enregistré.	Vessels. Navires.	Tons Register Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
Paspebiac, Que.—											
Great Britain	(a)	1	1,363								
Great Britain	(b)			1	360	1	195				
Newfoundland	(b)	1	142								
St. Pierre	(b)	2	180								
United States	(a)	1	1,141	3	5,067						
United States	(b)	1	271								
Total		6	3,097	4	5,427	1	195				
Pictou, N.S.—											
Great Britain	(a)	3	3,905								
Great Britain	(b)	9	3,392	2	1,121						
United States	(a)	2	367								
Total		14	7,664	2	1,121						
Port Alberni, B.C.—											
Great Britain	(a)										
United States	(a)	8	585	2	17						
Sea Fisheries	(a)	1	4								
Total		9	589	2	117						
Port Hastings, N.S.—											
British W. Indies	(a)			1	1,367						
United States	(a)	2	1,443	16	1,898						
Total		2	1,443	17	3,265						
Port Hawkesbury, N.S.—											
Great Britain	(b)	1	380	1	568						
British W. Indies	(b)	1	148								
Newfoundland	(b)	3	206								
Cuba	(a)			1	509						
United States	(a)			2	53						
United States	(b)	1	271	4	427						
Sea Fisheries	(a)	22	3,325	4	554						
Sea Fisheries	(b)	9	724	5	419						
Total		37	5,054	17	2,530						
Port Hood, N.S.—											
Sea Fisheries	(b)			2	147						
Port La Tour, N.S.—											
United States	(a)			2	62						
Sea Fisheries	(b)	1	10								
Total		1	10	2	62						
Port Mulgrave, N.S.—											
Great Britain	(a)	1	76								
France	(a)										
United States	(a)	1	1,542	15	5,445						
Sea Fisheries	(a)	1	154								
Total		3	1,772	15	5,445						
Port Simpson, B.C.—											
United States	(a)			10	3,595						
Port Wade, N.S.—											
United States	(b)	1	74								
Powell River, B.C.—											
Australia	(a)	8	22,648								
United States	(a)	19	3,791	90	33,950						
Total		27	26,439	90	33,950						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels, entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													1	1,363
													2	555
													1	842
													2	180
													4	6,208
													1	271
													11	8,719
3	464												3	3,905
													14	4,977
													2	367
3	464												19	9,249
		1	3,000										1	3,000
													10	702
													1	4
		1	3,000										12	3,706
													1	1,367
													18	3,341
													19	4,708
													2	948
													1	148
													3	206
													1	309
													2	53
													5	698
													26	3,879
													14	1,143
													54	7,584
													2	147
													2	62
													1	10
													3	72
													1	76
		1	672										1	672
													16	6,987
													1	154
		1	672										19	7,889
													10	3,595
													1	74
													8	22,648
													109	37,741
													117	60,389

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.	British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.
Prince Rupert, B.C.—										
United States.....(a)	83	56,524	110	30,470						
United States.....(b)			1	8						
Australia.....(b)			1	634						
Sea Fisheries.....(a)	688	9,847	870	15,723						
Total.....	771	66,371	982	46,835						
Pugwash, N.S.—										
Great Britain.....(b)	1	336								
Quebec, Que.—										
Great Britain.....(a)	103	330,495	6	9,495	5	7,810				
Great Britain.....(b)	2	779	1	481	1	925				
British W. Indies.....(a)	1	1,451								
Newfoundland.....(a)	17	4,846								
Newfoundland.....(b)	8	647								
Belgium.....(a)	1	4,093								
Brazil.....(a)	1	3,330								
France.....(a)	5	10,972	2	2,560	7	10,923				
United States.....(a)			10	14,675						
Australia.....(a)	1	4,698								
Gibraltar.....(a)	1	2,840	1	1,614	1	2,206				
Greece.....(a)	1	4,664	1	1,632						
Total.....	141	368,815	21	30,457	14	21,864				
Rimouski, Que.—										
Great Britain.....(a)	9	17,942								
Great Britain.....(b)					2	2,076				
United States.....(a)	4	3,352								
Total.....	13	21,294			2	2,076				
River Hebert, N.S.—										
Great Britain.....(b)			1	577						
St Andrews, N.B.—										
United States.....(a)	347	21,271	802	12,318						
United States.....(b)	1	71	2	299						
Total.....	348	21,342	804	12,617						
St. George, N.B.—										
United States.....(a)	8	89	74	1,819						
United States.....(b)	7	313	35	5,214						
Total.....	15	402	109	7,033						
St. John, N.B.—										
Great Britain.....(a)	125	466,599	1	3,113	2	1,916				
Great Britain.....(b)	9	4,201	12	8,298	1	1,062				
British W. Indies.....(a)	3	4,780								
British W. Indies.....(b)	3	706	1	296						
Belgium.....(a)	13	52,147							1	3,203
San Domingo.....(a)			4	5,243						
Cuba.....(a)	2	2,576								
France.....(a)	17	71,599	1	1,609						
Greece.....(a)	1	1,966	3	8,069	1	2,612				
Sweden.....(a)										
Italy.....(a)	5	16,366			1	2,266				
Norway.....(a)					1	1,957				
Uruguay.....(a)	2	6,786								
Portugal.....(b)										
Denmark.....(a)					2	1,314				
New Zealand.....(a)	1	5,905								
Argentina.....(b)			3	2,976						
United States.....(a)	56	43,976	193	214,748	1	2,756	1	2,276		
United States.....(b)	36	992	87	7,046						
French West Indies.....(b)	1	268								
British South Africa.....(a)	4	14,234								

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
													193	86,994
													1	8
													1	634
													1,558	25,570
													1,753	113,206
													1	336
													114	347,800
													4	2,185
													1	1,451
													17	4,846
													8	647
													1	4,093
													1	3,330
		11	11,106										25	35,561
		1	1,079										11	15,754
													1	4,698
						2	4,934						5	11,594
										Grecian	2	4,172	4	10,468
		12	12,185			2	4,934				2	4,172	192	442,427
													9	17,942
3	538												5	2,614
													4	3,352
3	538												18	23,908
													1	577
													1,149	33,589
													3	370
													1,152	33,959
													82	1,908
													42	5,527
													124	7,435
										Portuguese	1	2,861	129	474,489
5	760									Finnish	2	1,938	29	16,259
													3	4,780
													4	1,002
													14	55,350
													4	5,243
													2	2,576
		3	12,696										21	85,904
										Japanese	1	4,259	11	28,356
										Grecian	5	11,450		
										Swedish	1	1,898	1	1,898
						7	20,908						13	39,540
													1	1,957
													2	6,786
1	210									Portuguese	1	276	2	486
													2	1,314
													1	5,905
													3	2,976
										Swedish	1	1,118	253	271,366
										Cuban	1	1,492		
													123	8,038
													1	268
													4	14,234

No. 14.—Statement of the Number and Tonnage of Steam

N° 14.—Tableau du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. Ports et ports secondaires et pays de départ.	British. Britannique.		United States. Américaine.		Norwegian. Norvégienne.		Austrian. Autrichienne.		Belgian. Belge.	
	Vessels. Navires.	Tons Register Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
St. John, N.B.—*Con.*										
Spanish Africa (*b*)	2	722								
Gibraltar (*a*)	3	8,463								
Sea Fisheries (*a*)	2	92								
Sea Fisheries (*b*)	15	400								
Total	300	707,778	305	251,398	9	13,883	1	2,276	1	3,203
St. Martins, N.B.—										
United States (*b*)	17	8,845	12	5,106						
Sea Fisheries (*a*)			24	1,896						
Sea Fisheries (*b*)	1	12								
Total	18	8,857	36	7,002						
St. Peters, N.S.—										
United States (*a*)			1	144						
United States (*b*)			2	246						
Sea Fisheries (*a*)			14	2,233						
Total			17	2,623						
St. Stephen, N.B.—										
United States (*a*)	8	235	69	776						
United States (*b*)			3	436						
Total	8	235	72	1,212						
Salmon River, N.S.—										
United States (*b*)	2	142								
Sea Fisheries (*b*)	1	11								
Total	3	153								
Sandy Cove, N.S.—										
United States (*a*)	1	15								
Sandy Point, N.S.—										
Newfoundland (*b*)	2	153	3	262						
United States (*a*)	1	794								
United States (*b*)	1	99	10	1,217						
Sea Fisheries (*b*)	1	39	90	6,208						
Total	5	1,085	103	7,687						
Shediac, N.B.—										
Great Britain (*b*)										
United States (*a*)	1	224								
Total	1	224								
Sheet Harbour, N.S.—										
Great Britain (*b*)			1	449						
Shelburne, N.S.—										
Newfoundland (*a*)	1	60								
Newfoundland (*b*)	5	774	3	287						
United States (*b*)	1	365	5	360						
Sea Fisheries (*a*)			1	65						
Sea Fisheries (*b*)	4	223	33	2,594						
Total	11	1,422	42	3,306						
Sherbrooke, N.S.—										
United States (*b*)	2	232	2	752						
Shippegan, N.B.—										
Great Britain (*a*)										
Sea Fisheries (*a*)	15	165								
Sea Fisheries (*b*)	75	1,106								
Total	90	1,271								

(*a*) Steam—A vapeur. (*b*) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	732
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	8,463
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	92
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	400
6	970	3	12,696	.....	.....	7	20,908	.....	.....	.....	13	25,292	645	1,038,404
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29	13,951
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	1,896
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	12
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54	15,859
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	144
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	246
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	2,233
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	2,623
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	77	1,011
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	436
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	1,447
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	142
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	11
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	153
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	15
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	415
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	794
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	1,316
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91	6,247
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	108	8,772
2	417	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	417
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	224
2	417	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	641
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	449
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	60
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	1,061
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	725
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	65
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	37	2,817
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53	4,728
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	984
1	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	247
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	165
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75	1,106
1	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91	1,518

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14.—TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.	Vessels. — Navires	Tons Register — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Sidney, B.C.—											
Great Britain	(a)	1	1,184								
Australia	(a)	2	4,665								
United States	(a)	38	955	38	4,765						
United States	(b)	6	1,002	6	989						
Total		47	7,806	44	5,754						
Sorel, Que.—											
Newfoundland	(b)	1	99								
United States	(a)										
Total		1	99								
Souris, P.E.I.—											
Newfoundland	(a)	1	119								
Newfoundland	(b)	3	175								
St. Pierre	(b)	2	186								
United States	(b)			3	176						
Sea Fisheries	(b)	17	586	3	243						
Total		23	1,066	6	419						
Steveston, B.C.—											
United States	(a)	83	1,620	124	3,336						
United States	(b)			14	342						
Sea Fisheries	(a)			6	141						
Sea Fisheries	(b)			2	40						
Total		83	1,620	146	3,859						
Sydney, N.S.—											
Great Britain	(a)	66	162,147	4	5,985	6	6,427				
Great Britain											
Newfoundland	(a)	166	270,775	9	9,242						
Newfoundland	(b)	268	20,255								
Belgium	(a)	4	13,773	1	1,528						
France	(a)	16	37,911			12	20,640				
Germany	(a)										
Holland	(a)	4	9,877								
Italy	(a)					1	3,458				
Norway	(a)					7	12,692				
Sweden	(a)										
Saint Pierre	(a)	5	900								
Saint Pierre	(b)	53	4,377								
United States	(a)	16	47,019	2	2,973	1	3,579				
Denmark	(a)			1	1,493						
British South Africa	(a)	5	15,789			1	2,598				
Roumania	(a)	2	4,701								
Uruguay	(a)	2	6,896								
Chili	(a)	1	2,676								
Gibraltar	(a)	5	16,665								
Australia	(a)	1	5,438								
Sea Cable and Admiralty	(a)	1	984								
Sea Fisheries	(a)	5	955	10	2,027						
Sea Fisheries	(b)	2	33	17	361						
Total		622	621,171	44	23,609	28	49,394				
Three Rivers, Que.—											
Great Britain	(a)	7	17,505			1	1,337				
Tusket, N.S.—											
Sea Fisheries	(b)	1	9	1	111						
Union Bay, B.C.—											
Great Britain	(a)	4	12,053								
United States	(a)	47	102,467	83	20,399						
United States	(b)	6	4,294	125	51,433						

(a) Steam—A vapeur. (b) Sail—A voiles.

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

à voiles et à vapeur, *allant à la mer, etc.—Suite.*

Danish. Danoise.		French. Française.		German. Allemande.		Italian. Italienne.		Russian. Russe.		Other Nationalities. Autres nationalités.			Total. Total.	
Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Names. Noms.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Vessels. Navires.	Tons Register. Tonnage enregistré.
		2	4,626										3	5,810
													2	4,665
													76	5,720
													12	1,991
		2	4,626										93	18,186
													1	99
		1	1,079										1	1,079
		1	1,079										2	1,178
													1	119
													3	125
													2	186
													3	176
													20	829
													29	1,485
													207	4,956
													14	342
													6	141
													2	40
													229	5,479
										Brazilian	1	3,490	77	178,049
										Unregistered	5	6,737	5	6,737
										Dutch	1	8	176	280,025
													268	20,255
										Dutch	1	2,266	6	17,567
		9	9,089							Brazilian	1	2,984	38	70,624
										Spanish	1	1,896	1	1,896
										Dutch	30	57,897	35	72,819
										Japanese	1	5,045		
						1	3,665						2	7,123
													7	12,692
1	1,350												1	1,350
		10	2,160										15	3,060
		1	131										54	4,508
1	1,350							1	2,394	Dutch	2	3,887	23	61,202
3	3,872												4	5,365
													6	18,387
													2	4,701
													2	6,896
													1	2,676
1	2,368	1	4,287							Grecian	14	33,967	21	57,287
													1	5,438
													1	984
		46	6,842										61	9,824
													19	394
6	8,940	67	22,509			1	3,665	1	2,394		57	118,177	826	849,859
													8	18,842
													2	120
		2	5,748							Dutch	1	3,756	4	12,053
													133	132,370
													131	55,727

No. 14.—STATEMENT of the Number and Tonnage of Steam

N° 14. — TABLEAU du nombre et du tonnage des navires

Ports and Outports and Countries for which Departed. — Ports et ports secondaires et pays de départ.		British. — Britannique.		United States. — Américaine.		Norwegian. — Norvégienne.		Austrian. — Autrichienne.		Belgian. — Belge.	
		Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Union Bay, B. C.—*Con.*											
British Oceania	(a)	12	43,845								
China	(a)	4	19,739								
Japan	(a)	8	26,136								
Total		81	208,534	208	71,832						
Vancouver, B.C.—											
Great Britain	(a)	12	36,250								
Australia	(a)	21	95,262								
Australia	(b)			4	3,431						
Japan	(a)	4	14,599								
China	(a)	40	220,956	1	1,233						
China	(b)			1	861						
Peru	(a)	4	11,792								
Cuba	(a)			1	1,805						
France	(a)										
Russia	(a)	1	3,953								
United States	(a)	691	538,983	427	315,653	15	41,173				
United States	(b)			1	861						
Mexico	(a)			1	4,267						
Chili	(a)			2	2,785	2	1,630				
British South Africa	(b)			1	1,501						
Sea Fisheries	(a)	45	631	10	349						
Total		818	922,426	449	332,746	17	42,803				
Victoria, B.C.—											
Great Britain	(a)	3	7,996								
Australia	(a)	9	54,929								
China	(a)	29	185,468								
Japan	(a)										
Russia	(a)	1	3,953								
United States	(a)	804	1,013,632	729	448,719	4	7,437				
United States	(b)	103	20,984	22	5,175						
Sea Fisheries	(a)	17	426	339	6,771	2	48				
Total		966	1,287,388	1,090	460,665	6	7,485				
Westport, N.S.—											
United States	(a)	6	104								
United States	(b)			34	646						
Total		6	104	34	646						
Weymouth, N.S.—											
British W. Indies	(b)	1	449								
Cuba	(b)	1	393	1	204						
United States	(b)	11	1,078	1	92						
Total		13	1,920	2	296						
White Rock, B.C.—											
United States	(a)	65	1,820	13	319						
Windsor, N.S.—											
United States	(a)	16	12,192	4	3,108						
United States	(b)	48	50,527	31	25,357						
Total		64	62,719	35	28,465						
Yarmouth, N.S.—											
British W. Indies	(a)	1	1,452								
Cuba	(b)	2	217								
St. Pierre	(a)										
United States	(a)			121	227,089						
United States	(b)	21	1,816	48	858						
Sea Fisheries	(a)	27	1,139	11	613						
Sea Fisheries	(b)	22	919	28	2,084						
Total		73	5,543	208	230,644						

(a) Steam—A vapeur. (b) Sail—A voiles.

and Sailing Vessels entered Outwards, *for Sea, etc.—Concluded.*

à voiles et à vapeur, *allant à la mer, etc.—Fin.*

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.	
Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Names. — Noms.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Vessels. — Navires.	Tons Register — Tonnage enregistré.
													12	43,845
										Japanese	1	3,749	5	23,488
										Japanese	3	11,328	11	37,464
		2	5,748								5	18,833	296	304,947
		31	32,815										43	69,065
													21	95,262
													4	3,431
										Japanese	7	30,481	11	45,080
										Japanese	2	5,416	43	227,665
													1	861
													4	11,792
													1	1,805
		2	2,327										2	2,327
										Japanese	1	5,115	2	9,068
										Dutch	3	11,300		
		2	6,456							Japanese	7	31,209	1,151	948,570
										Mexican	6	3,796		
													1	861
										Grecian	2	2,860	3	7,127
													4	4,415
													1	1,501
													55	980
		35	41,598								28	90,177	1,347	1,429,750
		21	44,664										24	52,660
													9	54,929
										Japanese	13	60,661	42	248,129
										Japanese	24	137,857	24	137,857
													1	3,953
		3	3,048							Japanese	45	247,654	1,585	1,720,490
													125	26,159
													358	7,245
		24	47,712								82	446,172	2,168	2,249,422
													6	104
													34	646
													40	750
													1	449
													2	597
													12	1,170
													15	2,216
													78	2,139
													20	15,300
													79	75,884
													99	91,184
													1	1,452
													2	217
		1	174										1	174
										Haytian	1	197	122	227,286
													69	2,674
													38	1,752
													50	3,003
		1	174								1	197	283	236,558

No. 15.—Summary Statement of the Nationality

N° 15.—Tableau sommaire des navires au long

No.	Countries to which Departed. — Pays de destination.	British. — Britannique.			United States. — Américaine.			Norwegian. — Norvégienne.			Austrian. — Autrichienne.			Belgian. — Belge.		
		Vessels. — Navires.	Tons Register. — Tonnage enregistré.		Vessels. — Navires.	Tons Register. — Tonnage enregistré.		Vessels. — Navires.	Tons Register. — Tonnage enregistré.		Vessels. — Navires.	Tons Register. — Tonnage enregistré.		Vessels. — Navires.	Tons Register. — Tonnage enregistré.	
1	United Kingdom	928	3,004,201		128	181,615		41	50,806							
2	Australia	47	211,106		5	4,065										
3	Bermuda	3	4,464													
4	British South Africa	20	73,257		2	3,447		5	14,017							
5	British Guiana	33	79,378													
6	British West Indies	47	28,203		5	5,985		8	5,872							
7	British Oceania	17	56,171													
8	British Straits Settlements							1	2,232							
9	Gibraltar	18	56,718		2	4,115		1	2,206							
10	Newfoundland	1,287	563,828		63	39,509		13	19,673							
11	New Zealand	2	11,619													
12	Argentina	7	23,027		5	5,340		3	3,736							
13	Azores and Madeira	6	4,473		1	340										
14	Belgium	37	146,915		4	10,625		3	7,130					1		3,203
15	Brazil	5	6,337		1	735										
16	Canary Islands	3	1,022													
17	Chili	1	2,676		2	2,785		2	1,630							
18	China	73	426,163		2	2,094										
19	Cuba	36	35,098		7	5,569		1	629							
20	Denmark				1	1,493		2	1,314							
21	France	85	231,181		15	25,313		32	60,881							
22	French Africa	1	799													
23	French West Indies	7	1,118													
24	Germany	1	2,704													
25	Greece	9	25,592		10	21,115		1	2,612							
26	Greenland, Iceland, etc	1	88					1	254							
27	Hayti	1	156													
28	Holland	12	42,457		2	5,952										
29	Italy	8	26,618		2	7,188		3	9,182							
30	Japan	12	40,735													
31	Mexico	5	8,038		34	163,556										
32	Norway	2	4,343		1	1,604		17	31,659							
33	Peru	4	11,792													
34	Porto Rico	33	3,361													
35	Portugal															
36	Roumania	4	9,412		3	5,803										
37	Russia	3	11,859													
38	St. Pierre	99	9,662		1	235										
39	San Domingo				6	8,279										
40	Sea Fisheries	2,134	94,196		2,168	75,502		2	48							
41	Spain	1	1,453		1	1,263										
42	Spanish Africa	2	722													
43	Sweden															
44	Turkey				1	1,614		1	3,146							
45	United States	3,972	3,381,886		5,329	2,299,965		56	96,392		1	2,276		1		1,899
46	Uruguay	5	18,423		1	2,029										
47	Sea Cable and Admiralty	18	17,474		13	3,055										
	Total	8,989	8,678,745		7,815	2,890,190		193	313,419		1	2,276		2		5,102

SESSIONAL PAPER No. 11a

of Sea-going Vessels entered Outwards, *for Sea*, for each Country.

cours sortis *allant à la mer* pour chaque pays.

Danish. — Danoise.		French. — Française.		German. — Allemande.		Italian. — Italienne.		Russian. — Russe.		Other Nationalities. — Autres nationalités.			Total. — Total.			
Vessels—Navires.	Tons Register. Tonnage enregistré.	Vessels—Navires.	Tons Register. Tonnage enregistré.	Vessels—Navires.	Tons Register. Tonnage enregistré.	Vessels—Navires.	Tons Register. Tonnage enregistré.	Vessels—Navires.	Tons Register. Tonnage enregistré.	Name of Flag. — Nom du drapeau.	Vessels—Navires.	Tons Register. Tonnage enregistré.	Vessels	Navires.	Tons Register. Tonnage enregistré.	No.
										Brazilian	1	3,490				
										Grecian	1	1,927				
										Finnish	2	1,935				
42	12,177	102	169,432					3	1,029	Portuguese	1	2,861	1,256	3,438,299		1
										Swedish	2	2,086				
										Unregistered	5	6,737				
													52	215,171		2
													3	4,464		3
													2	90,721		4
													33	79,378		5
													60	40,060		6
													17	56,171		7
													1	2,232		8
1	2,368	1	4,287			4	10,157			Grecian	21	50,606	48	130,457		9
3	260									Dutch	1	8	1,367	623,278		10
													2	11,619		11
1	1,211												16	33,314		12
													7	4,813		13
										Brazilian	1	2,999	47	173,138		14
										Dutch	1	2,266				
										Brazilian	1	2,903	7	9,975		15
													3	1,022		16
													5	7,091		17
										Japanese	16	69,826	91	498,083		18
													44	41,296		19
3	3,872												6	6,679		20
		61	80,121							Brazilian	10	29,175	203	426,671		21
		1	1,433										2	2,232		22
													7	1,118		23
										Spanish	1	1,896	3	4,600		24
										Grecian	21	49,699	42	103,277		25
1	105									Japanese	1	4,259				
													3	447		26
													1	156		27
										Dutch	43	90,394	58	143,848		28
										Japanese	1	5,045				
						13	40,166						26	83,154		29
										Japanese	35	184,120	47	224,353		30
										Grecian	2	2,860	41	174,474		31
1	8												21	37,614		32
													4	11,792		33
													33	3,361		34
1	210									Portuguese	4	516	5	726		35
										Roumanian	3	5,570	10	20,785		36
										Japanese	1	5,115	4	16,974		37
		59	12,430										159	22,327		38
													6	8,279		39
3	315	157	24,132										4,464	194,193		40
1	178									Dutch	1	2,324	4	5,218		41
													3	722		42
1	1,350									Swedish	1	1,898	3	3,248		43
													2	4,760		44
										Cuban	1	1,492				
										Dutch	8	28,147				
										Grecian	9	23,280				
8	12,117	26	30,712	1	1,968	22	60,829	1	2,394	Haytian	1	197	9,497	6,227,959		45
										Japanese	52	278,863				
										Mexican	6	3,796				
										Portuguese	1	431				
										San Domingo	1	197				
										Swedish	1	1,118				
													6	20,452		46
		3	3,348										34	23,877		47
66	34,171	410	325,895	1	1,968	39	111,152	4	3,423		257	868,039	17,777	13,234,380		

No. 16.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage) which arrived at each Port and Outport.

N° 16.—TABLEAU indiquant le genre, le nombre et le tonnage des navires canadiens et des Etats-Unis naviguant sur les rivières et les lacs entre le Canada et les Etats-Unis (sans compter les traversiers) arrivés à chaque port ou ports secondaires.

VESSELS ARRIVED—NAVIRES ARRIVÉS.

Ports and Outports. — Ports et ports secondaires.	Canadians—Canadiens.						United States—Etats-Unis.					
	Steam—À vapeur.			Sail—À voiles.			Steam—À vapeur.			Sail—À voiles.		
	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistre.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.
Amherstburg, Ont	15	457	70	8	851	37	476	155,244	7,077	11	3,243	31
Bath, Ont	3	390	22	6	1,064	27						
Belleville, Ont	22	2,736	185	33	6,442	157				2	364	4
Blind River, Ont	18	4,598	176				28	9,848	407	25	12,177	176
Bowmanville, Ont							10	1,518	100	1	243	5
Bridgeburg, Ont							41	1,357	146	24	1,200	60
Brockville, Ont	120	151,794	8,566	5	3,755	30	356	38,720	3,595	18	8,874	124
Bruce Mines, Ont	5	154	20				13	5,683	159	2	1,528	14
Byng Inlet, Ont	22	38,998	452				30	81 304	754			
Cardinal, Ont	26	5,509	264				8	1,581	94			
Chatham, Ont	12	2,950	267				43	13,144	1,128	6	1,896	48
Courtright, Ont	43	33,197	743	10	8,464	60	7	7,741	157			
Chippawa, Ont	1	30	4				2	162	14			
Clarenceville, Que							4	255	36			
Cobourg, Ont	412	1,250,187	14,832	1	243	5	12	2,052	144			
Cockburn Island, Ont	3	70	18				10	324	48			
Collingwood, Ont							4	2,436	69			
Cornwall, Ont	5	2,753	31				116	7,866	476			
Courtright, Ont							1,815	300,589	20,295	56	42,473	496
Culter, Ont	6	1,417	49				12	5,700	195	11	5,779	77
Dawson, Y.T	2	1,280	53	3	540	6	12	6,497	334	9	3,332	18
Depot Harbour, Ont							61	159,083	1,755			
Descronto, Ont	3	483	27									
Erieau, Ont	68	3,802	476				12	12,692	317			
Forty Mile, Y.T	3	1,770	78	8	554	12	16	8,485	439	10	3,582	12
Fort Frances, Ont	18	904	90									
Fort William, Ont	65	193,671	4,155	1	411	6	301	791,062	7,970	11	9,666	88
French River, Ont	1	115	11									
Gananoque, Ont	746	15,454	1,225				1,242	8,394	1,250			
Georgeville, Que	1	50	4									
Goderich, Ont							12	8,918	413			
Gore Bay, Ont	27	5,290	341							2	777	17
Iroquois, Ont	4	153	12				14	1,567	106			
Kenora, Ont	52	1,167	169				9	94	21			
Key Harbour, Ont	17	38,270	387				1	2,992	25			
Kincardine, Ont							4	1,199	51			
Kingston, Ont	709	356,698	21,631	352	17,602	625	281	18,156	980	4	2,552	28

Kingsville, Ont.	2	60	9										
Levis, Que	10	9,524	169				8	8,800	178	21	2,115	42	
Little Current, Ont.	24	18,675	380				28	43,134	544	2	996	15	
Magog, Que.	1	50	4										
Menford, Ont.							16	6,052	230				
Michipicoten Harbour Ont.	12	26,268	240				8	12,042	116				
Midland, Ont.	20	35,473	381				31	65,303	681	1	564	7	
Montreal, Que	448	352,969	7,353	103	66,791	584	419	435,800	10,645	41	6,133	158	
Morrisburg, Ont	800	24,000	2,400				12	1,825	134				
Napanee, Ont.	11	604	56	6	1,115	30							
Niagara, Ont.	639	602,577	42,884										
Ottawa, Ont.				9	887	18							
Owen Sound, Ont.	256	126,718	4,842				5	8,336	248				
Parry Sound, Ont.							11	15,811	1,329				
Picton, Ont.				27	5,693	161							
Pointe au Pic, Que	1	703	17										
Point Edward, Ont.	84	272,281	4,854	7	2,153	39	160	117,070	3,018	12	6,452	67	
Port Arthur, Ont.	50	132,232	2,731				245	383,994	5,403	69	48,681	513	
Port Burwell, Ont.	9	330	47										
Port Colborne, Ont.	83	66,433	1,163	39	26,560	222	61	122,092	1,393	14	3,242	28	
Port Dalhousie, Ont.	20	1,979	221				4	1,457	46				
Port Dover, Ont.	95	4,637	485				18	676	102				
Port Hope, Ont.				3	678	14	3	423	30				
Port Maitland, Ont.							21	7,979	259				
Port McNicoll, Ont.							9	13,279	193	2	878	14	
Port Stanley, Ont.	11	358	47				58	65,350	4,375				
Prescott, Ont.	100	60,226	3,719	3	2,754	18	223	71,090	1,873				
Quebec, Que.	84	67,035	1,328	34	18,292	174	18	11,916	258	267	27,815	534	
Queenston, Ont.	387	413,946	28,228										
Rainy River, Ont.	33	1,003	166										
Rimouski, Que.	4	3,352	72										
Rockport, Ont.							75	656	93	1	20	3	
St. Johns, Que.				69	7,428	142	40	2,170	299	136	14,233	270	
Sandwich, Ont.	4	225	19	3	1,425	16	387	254,325	3,469	91	26,405	98	
Sarnia, Ont.	4,529	535,988	28,977	102	42,823	553	7,411	1,291,403	68,046	40	40,396	202	
Sault Ste. Marie, Ont.	375	217,057	4,413				248	413,360	3,499	22	9,614	174	
Smith's Falls, Ont.	22	1,686	122										
Sorel, Que.	1	540	17	2	1,295	12	1	867	40	49	5,017	98	
Southampton, Ont.	2	208	6	1	682	15							
Thessalon, Ont.	12	3,101	125				16	7,038	232	24	12,097	168	
Thorold, Ont.	1	477	16				2	1,516	34				
Three Rivers, Que.				13	1,931	32	1	708	19	155	15,866	310	
Toronto, Ont.	679	703,309	42,911	46	28,236	278	49	36,415	2,077				
Trenton, Ont.	4	650	41	1	185	5							
Valleyfield, Que.				1	370	4							
Walkerville, Ont.	9	461	66	9	4,845	83	66	15,359	1,010	5	823	8	
Wallaceburg, Ont.	6	288	42	5	1,150	20	509	182,091	18,117				
Welland, Ont.				1	891	2							
West Dock, Ont.	40	9,477	429	6	324	22	1,260	324,764	12,660				
Whitby, Ont.	2	322	18				7	1,059	70				
White Horse, Y.T.							5	2,317	107	1	364	1	
Wiarton, Ont.	125	16,727	933	21	5,825	105							
Windsor, Ont.	72	57,391	1,048	23	7,659	137	112	29,814	1,881				
Wolfe Island, Ont.	40	573	68	6	90	12				2	18	4	
Total	11,587	5,883,911	235,405	967	269,908	3,653	16,499	5,611,030	191,569	1,147	319,415	3,912	

No. 16.—Summary Statement of Canadian and United States Vessels trading on Inland Waters, which arrived at Canadian Ports and Outports.

N° 16.—Tableau sommaire des navires canadiens et des États-Unis naviguant dans les eaux de l'intérieur, arrivés à des ports du Canada.

RECAPITULATION—RÉCAPITULATION.

	Vessels. — Navires.	Tons register. — Tonnage enregistré.	Crew. — Equipage.
Canadian—Canadiens—Steam—À vapeur	11,587	5,883,911	235,405
Sail—À voile	967	269,908	3,653
United States—Etats-Unis—Steam—À vapeur	16,499	5,611,030	191,569
Sail—À voile	1,147	319,415	3,912
Total	30,200	12,084,264	434,539

DESCRIPTION OF VESSELS—DESCRIPTION DES NAVIRES.

Description.	Vessels. — Navires.	Tons register. — Tonnage enregistré.
Steam—À vapeur—Screw—À hélice	26,664	10,153,673
Paddle—À nubes	1,384	1,320,919
Stern-wheel—Roue à l'arrière	38	20,549
Sail—À voiles—Schooners—Barques	642	287,443
Sloops—Goélettes	11	199
Barges—Barges	1,461	301,681
Total	30,200	12,084,264

No. 17.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage) which Departed from each Port and Outport.

N° 17.—TABLEAU indiquant le genre, le nombre et le tonnage des navires canadiens et des États-Unis naviguant sur les rivières et les lacs entre le Canada et les États-Unis (sans compter les passages d'eau), partis de chaque port ou ports secondaires.

VESSELS DEPARTED.

Ports and Outports. / Ports et ports secondaires.	Canadian—Canadiens.						United States—Etats-Unis.					
	Steam—A vapeur.			Sail—A voiles.			Steam—A vapeur.			Sail—A voiles.		
	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipe.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipe.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipe.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Equipe.
Amherstburg, Ont	18	664	80	13	1,662	52	469	142,013	7,159	9	2,929	37
Bath, Ont	4	477	29	5	829	22						
Belleville, Ont	19	2,585	163	35	6,881	161				2	364	4
Blind River, Ont	15	4,758	155				28	9,858	407	25	12,177	176
Bowmanville, Ont							10	1,518	100	1	243	5
Bridgeburg, Ont							41	1,357	146	24	1,200	60
Brockville, Ont	122	154,385	8,725	5	3,755	30	355	36,568	3,836	18	8,874	123
Bruce Mines, Ont	4	128	16				13	5,683	159	2	1,528	14
Byng Inlet, Ont	19	34,021	390				31	81,642	768			
Cardinal, Ont	26	5,500	264				8	1,581	94			
Chatham, Ont	16	3,142	277	4	920	16	47	13,683	622	7	2,212	56
Chippawa, Ont	1	30	4				2	162	14			
Clarenceville, Que							4	255	30			
Chicoutimi, Que	4	3,277	70									
Cobourg, Ont	412	1,250,187	14,832	1	243	5	12	2,052	144			
Cockburn Island, Ont	2	26	12				10	324	48			
Collingwood, Ont	4	5,577	86				3	1,950	52			
Cornwall, Ont	5	2,958	44				111	7,744	409			
Courtright, Ont							1,817	300,955	20,293	54	40,802	472
Cutler	19	3,585	149				12	5,700	195	11	5,779	77
Dawson, Y.T	3	1,770	76	11	766	20	16	8,485	445	11	3,878	22
Depot Harbour, Ont	1	2,030	20				62	161,618	1,767			
Deseronto, Ont	3	483	27									
Erian, Ont	68	3,802	476				12	12,692	317			
Forty Mile, Y.T	3	1,770	76	12	760	18	16	8,485	439	12	3,914	12
Fort Frances, Ont	18	304	90									
Fort William, Ont	30	90,851	1,147				301	791,062	7,970	11	9,666	88
Gananoque, Ont	762	10,224	1,279				1,185	8,070	1,459			
Georgeville, Que	1	50	4									
Goderich, Ont	18	32,505	189				14	16,095	448			
Gore Bay, Ont										2	777	17
Iroquois, Ont	4	153	12				14	1,567	106			
Kenora, Ont	49	1,021	146				9	94	21			
Key Harbour, Ont	9	20,730	204				1	2,992	25			
Kincardine, Ont				1	185	5	3	932	37			
Kingston, Ont	893	389,191	22,075	316	21,470	632	257	22,661	767	3	2,059	21
Kingsville, Ont	2	60	9				1	409	14			

No. 17.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes, etc.—*Concluded.*

N° 17.—TABLEAU indiquant le genre, le nombre et le tonnage des navires canadiens et des Etats-Unis naviguant sur les rivières et les lacs, etc.—*Fin.*

VESSELS DEPARTED—*Concluded.*

Ports and Outports. — Ports et ports secondaires.	Canadian—Canadiens.						United States—Etats-Unis.					
	Steam—A vapeur.			Sail—A voiles.			Steam—A vapeur.			Sail—A voiles.		
	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipe.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipe.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipe.	Vessels. Navires.	Tons Register. Tonnage enregistré.	Crew. Equipe.
Lévis, Que.	6	6,148	102							14	1,399	28
Little Current, Ont.	7	2,384	80				28	43,134	544	2	996	15
Magog, Que.	1	50	4									
Meaford, Ont.							16	6,052	236			
Michipicoten Harbour, Ont.	7	13,797	147				8	12,042	116			
Midland, Ont.	28	63,375	693				53	162,402	1,305	1	564	7
Montreal, Que.	529	437,299	9,025	149	88,669	844	237	174,935	4,169	40	6,686	154
Morrisburg, Ont.	780	23,400	2,340				11	1,661	124			
Napanee, Ont.	11	604	56	6	1,115	30						
Niagara, Ont.	911	930,803	63,036							79	7,852	158
Ottawa, Ont.	1	112	9	1	97	2						
Owen Sound, Ont.	219	45,085	2,901				5	8,336	248			
Parry Sound, Ont.							15	28,707	1,434			
Penetanguishene, Ont.	1	258	12									
Picton, Ont.				27	5,693	151						
Point Edward, Ont.	63	206,138	4,387	5	687	22	155	106,211	3,023	10	6,184	60
Port Arthur, Ont.	62	162,066	4,125				250	376,993	5,672	62	49,218	504
Port Burwell, Ont.	14	495	77									
Port Colborne, Ont.	158	265,325	2,873	49	33,156	282	68	134,179	1,494	15	3,435	34
Port Dalhousie, Ont.	17	4,091	221	4	2,666	24	1	382	11			
Port Dover, Ont.	95	4,646	460				19	719	122			
Port Hope, Ont.				1	185	5	3	423	30			
Port Maitland, Ont.							21	7,979	259			
Port McNicoll, Ont.	3	13,214	74				28	121,633	798	2	878	14
Port Stanley, Ont.	12	1,969	44				57	64,080	4,280			
Pointe au Pic, Que.	14	0,436	241									
Prescott, Ont.	120	51,053	4,067	2	1,836	12	238	51,426	2,002			
Quebec, Que.	122	98,162	2,016	52	27,102	246	20	10,650	329	222	23,048	446
Queenston, Ont.	128	97,044	7,680									
Rainy River, Ont.	43	1,517	261									
Rimouski, Que.	4	3,352	72									
Rockport, Ont.							65	492	70			
St. John's, Que.	1	35	5	73	7,808	156	40	2,170	294	538	55,023	1,080
Sandwich, Ont.	5	293	22	3	2,07	22	385	254,166	3,452	03	11,501	465
Sarnia, Ont.	4,505	633,312	28,496	71	30,839	348	7,375	1,294,547	67,618	40	39,532	201
Sault Ste. Marie, Ont.	359	157,704	3,806	2	628	11	248	413,360	3,499	22	9,614	174
Smith Falls, Ont.	22	1,688	121									
Sorel, Que.				4	2,766	23	1	862	40	50	5,684	104

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Southampton, Ont.	2	208	6	1		682	15	16	7,038	232	24	12,097		168
Thessalon, Ont.	22	3,327	170						708	17				
Thorold, Ont.	16	15,271	299	1		1,114	7	1	708	19		16,602		324
Three Rivers, Que				9		839	18				162			6
Toronto, Ont.	678	595,842	42,999	53		33,278	307	44	34,234	2,011	1	1,790		
Trenton, Ont.	4	650	41	1		185	5							
Valleyfield, Que				1		370	4							
Walkerville, Ont.	15	810	117	16		6,331	111	89	24,643	1,310	4	1,084		16
Wallaceburg, Ont	6	256	39	5		1,440	26	597	180,021	16,021				
West Dock, Ont.	41	9,759	444	6		324	22	1,259	325,612	12,823				
Whitby, Ont	2	322	15					7	1,059	70				
White Horse, Y.T								6	2,787	138	4	1,461		4
Windsor, Ont.	125	16,922	933	21		5,837	105							
Windsor, Ont.	95	64,321	1,541	27		11,912	204	117	29,713	1,933	2	18		4
Wolfe Island, Ont.	39	572	67											
Total	11,847	5,976,120	230,263	993		305,046	3,963	16,249	5,532,881	184,109	1,579	350,498		5,150

No. 17.—Summary Statement of Canadian and United States Vessels, trading on Inland Waters, which Departed from Canadian Ports.

N° 17.—Tableau sommaire des navires canadiens et des Etats-Unis naviguant dans les eaux de l'intérieur, partis des ports du Canada.

RECAPITULATION—RÉCAPITULATION.

	Vessels. — Navires.	Tons Register. — Tonnage Enregistré.	Crew. — Équipage.
Canadian—Canadiens—Steam—À vapeur	11,847	5,976,120	236,263
Sail—À voiles	993	305,046	3,963
United States—Etats-Unis—Steam—À vapeur	16,249	5,532,881	184,109
Sail—À voiles	1,579	350,468	5,150
Total	30,668	12,164,515	429,485

DESCRIPTION OF VESSELS—DESCRIPTION DES NAVIRES.

Description.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.
Steam—A vapeur—Screw—À hélice	26,672	10,182,742
Paddle—À aubes	1,386	1,305,749
Sternwheel—Roue à l'arrière	38	20,510
Sail—À voile—Schooners—Barques	677	301,884
Sloops—Goélettes	10	177
Barges—Barges	1,885	353,453
Total	30,668	12,164,515

No. 18.—Statement showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage), which Arrived and Departed.

N° 18.—Tableau indiquant le genre, le nombre et le tonnage des navires canadiens et des Etats-Unis naviguant sur les rivières et lacs entre le Canada et les Etats-Unis (sans compter les passages d'eau) arrivés et partis.

—	Canadian—Canadiens.			United States—Etats-Unis.			Total.		
	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Équipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Équipage.	Vessels. — Navires.	Tons Register. — Tonnage enregistré.	Crew. — Équipage.
Arrived—Arrivés	12,554	6,153,819	239,058	17,646	5,930,445	195,481	30,200	12,084,264	434,539
Departed—Partis	12,840	6,281,166	240,226	17,828	5,883,349	189,259	30,668	12,164,515	429,485
Total	25,394	12,434,985	479,284	35,474	11,813,794	384,740	60,868	24,248,779	864,024

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade of the Dominion of Canada, which arrived at, or departed from the undermentioned Ports and Outports.

N° 19.—TABLEAU des navires britanniques et étrangers faisant le cabotage au Canada, arrivés aux ports ou ports secondaires ci-dessous mentionnés ou partis de nos ports.

STEAMERS—VAPEURS

Ports and Outports — Ports et ports secondaires	Vessels Arrived—Arrivés						Vessels Departed—Partis					
	British—Britanniques			Foreign—Étrangers			British—Britanniques			Foreign—Étrangers		
	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Équipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Équipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Équipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Équipage
Albert, N.B.	1	24	5				1	24	5			
Alert Bay, B.C.	697	330,134	19,493				681	325,616	19,278			
Amherstburg, Ont.	91	18,702	899				22	1,166	115			
Annapolis Royal, N.S.	95	5,120	632				97	5,341	636			
Antigonish, N.S.	40	2,762	401				42	2,924	425			
Anyox, B.C.	338	192,486	9,890	14	88,052	85	347	256,817	9,753	9	14,471	53
Arichat, N.S.	557	48,982	4,494	4	00	12	556	48,811	4,503	3	45	9
Baddeck, N.S.	261	73,867	3,545	1	47	5	251	60,908	3,349	8	11,323	240
Bamfield, B.C.	15	7,474	378				12	7,374	362			
Barrington Passage, N.S.	638	37,293	5,325	10	139	26	638	37,293	5,325	10	139	26
Barton, N.S.							1	205	8			
Bath, Ont.	137	9,292	788				126	7,671	777			
Bathurst, N.B.	4	613	41				5	665	43			
Beur River, N.S.	41	2,870	287				42	2,940	294			
Belliveau's Cove, N.S.	11	386	55				10	359	54	2	38	4
Belleville, Ont.	63	34,059	1,658				12	1,605	120			
Blind River, Ont.	33	10,031	652				10	2,176	75			
Bridgetown, N.S.	37	2,072	222				37	2,072	222			
Bridgewater, N.S.	28	2,360	249				28	2,360	249			
Britannia Beach, B.C.	847	217,555	11,632				828	214,944	11,451			
Brockville, Ont.	188	201,020	11,419				100	141,240	7,918			
Bruce Mines, Ont.	224	53,786	3,048				87	19,053	1,035			
Buctouche, N.B.	4	52	8				4	52	9			
Butedale, B.C.	238	81,768	4,674				231	82,500	4,699			
Byng Inlet, Ont.	20	3,908	222				22	8,551	270			
Campbellton, N.B.	8	10,240	153				1	2,276	26	1	30	6
Campo Bello, N.B.	153	24,793	1,708				151	24,255	1,678			
Canning, N.S.	9	1,125	71				9	1,125	72			
Canso, N.S.	1,030	152,748	10,980	12	1,316	171	1,030	152,540	10,948	6	1,104	53
Caraquet, N.B.	1	42	5				1	42	5			
Cardigan, P.E.I.	26	5,642	312				26	5,642	312			
Carcross, Y.T.	43	29,093	888				43	29,093	888			
Charlottetown, P.E.I.	191	21,213	1,098				189	20,710	1,669			
Chatham, N.B.	46	7,385	282	6	9,635	205	44	3,123	223			
Chatham, Ont.	20	2,574	167				14	2,113	124			
Chemainus, B.C.	334	32,601	2,027				337	33,616	1,957			
Chester, N.S.	30	688	111	2	29	5	29	673	104			

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

N° 19.—TABLEAU des navires britanniques et étrangers faisant le cabotage, etc.—*Suite.*

STEAMERS—VAPEURS—*Continued.*

Ports and Outports — Ports et ports secondaires	Vessels Arrived—Arrivés						Vessels Departed—Partis					
	British—Britanniques			Foreign—Etrangers			British—Britanniques			Foreign—Etrangers		
	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage
Cheticamp, N.S.	78	6,137	873				78	6,137	873			
Chicoutimi, Que.	23	9,416	872				38	22,807	1,079	2	2,200	43
Clark's Harbour, N.S.	352	19,396	2,959	9	235	34	352	19,396	2,959	14	434	56
Clementsport, N.S.	18	1,008	108				18	1,008	108			
Cobourg, Ont.	3	3,898	73				7	10,503	150			
Cockburn Island, Ont.	121	27,706	1,818				24	3,713	191			
Collingwood, Ont.	28	15,394	373				35	24,644	450			
Cornwall, Ont.	115	76,681	2,990				5	2,218	99			
Courtright, Ont.							6	263	40			
Crapaud, P.E.I.	42	2,814	336				42	2,814	336			
Cutler, Ont.	324	47,928	2,454				325	48,141	2,460			
Dalhousie, N.B.	4	5,006	72	8	10,549	246	1	13	3	1	30	10
Dawson, Y.T.	54	27,867	1,261	3	1,385	82	54	27,867	1,298	2	1,206	58
Depot Harbour, Ont.	13	29409	272				12	27,345	252			
Digby, N.S.	724	218,895	13,538				615	218,535	12,036			
Ellis Bay, Que.	18	3,312	270				18	3,312	270			
Erieau, Ont.	38	6,800	195	12	12,692	317	38	6,800	195	12	12,692	317
Esquimaux Point, Que.	56	7,343	876				56	7,343	876			
Forty Mile, Y.T.	3	1,236	70				5	2,516	124			
Fort William, Ont.	678	1,624,248	24,499				731	1,782,053	28,164			
Freeport, N.S.	190	28,460	2,331				149	21,914	1,870			
Gananoque, Ont.	140	55,029	3,138				17	2,462	183			
Gaspé, Que.	17	7,983	262				17	7,983	262			
Georgetown, P.E.I.	124	26,401	1,475				123	26,085	1,459			
Glace Bay, N.S.	2	70	6				2	70	6			
Goderich, Ont.	94	169,321	2,029	12	8,918	413	73	123,504	1,559	14	16,095	448
Gore Bay, Ont.	326	72,538	4,324				229	32,688	1,764			
Grand Narrows, N.S.	20	1,709	57				20	1,709	57			
Guysboro', N.S.	258	41,102	2,527				257	42,374	2,519			
Halifax, N.S.	1,299	377,070	16,342	34	17,632	731	1,353	337,898	14,303	38	60,651	963
Hamilton, Ont.	658	230,724	17,852				598	268,536	16,609			
Hamstport, N.S.	16	520	99				18	1,415	116			
Hillsboro', N.B.	17	153	134				17	153	134			
Indian Island, N.B.	2	30	5				4	74	10			
Inverness, N.S.	3	227	33				3	227	33			
Iona, N.S.	239	23,183	1,195				239	23,183	1,195			
Iroquois, Ont.	21	7,978	438				21	7,978	438			
Isaac's Harbour, N.S.	120	27,123	1,472				118	26,989	1,468	2	201	12
Kaslo, B.C.	427	223,736	8,927				427	222,052	8,929			
Kenora, Ont.	9	399	52				13	630	81			

Kentville, N.S.	83	4,233	581				83	4,233	581					
Key Harbour, Ont.	6	996	64				13	18,410	235					
Kincardine, Ont	8	733	45				8	733	45	1	267	12		
Kingsport, N.S.	124	7,936	744				124	7,936	744					
Kingston, Ont	414	181,710	7,653				224	48,406	2,889	2	3,351	73		
Kingsville, Ont	180	43,523	1,972				182	44,012	2,095					
Ladner, B.C.	106	6,186	680				108	6,469	703					
Ladysmith, B.C.	2,168	894,541	20,313				2,212	886,494	19,651					
La Have, N.S.	110	8,068	968				108	8,343	933	2	27	5		
Leamington, Ont	330	80,196	3,639											
Lévis, Que	33	48,695	883				36	54,753	1,007	8	8,800	178		
Little Current, Ont.	404	93,618	5,497				392	18,797	434					
Liverpool, N.S.	142	7,987	856	5	200	28	135	6,994	770	7	231	42		
Lockeport, N.S.	15	659	82				17	799	97					
Lord's Cove, N.B.	68	3,553	438	1	21	2	87	3,814	475	3	61	6		
Louisburg, N.S.	159	170,960	3,829	8	12,402	224	158	198,303	3,933	18	38,499	760		
Lower East Pubnico, N.S.	164	12,415	1,493	8	185	27	165	12,445	1,500	5	155	19		
Lunenburg, N.S.	119	7,387	775				129	7,631	848					
Mabou, N.S.	22	1,782	264				22	1,782	264					
Magdalen Islands, Que	53	10,176	1,063				53	10,176	1,063					
Mahone Bay, N.S.	19	1,362	118				18	1,359	112					
Maitland, N.S.	7	875	56				7	875	56					
Margaree, N.S.	87	6,911	976				87	6,911	976					
Margaretsville, N.S.	60	3,311	391				63	3,213	343					
Meaford, Ont	21	3,186	185				21	3,186	185					
Meteghan River, N.S.	2	47	8				2	47	8					
Michipicoten Harbour, Ont.	26	54,514	546				33	73,920	686					
Middleton, N.S.	52	2,652	364				52	2,652	364					
Midland, Ont	165	309,524	3,406				169	371,312	3,459					
Moncton, N.B.	82	8,127	585				80	2,857	507					
Montague Bridge, P.E.I.	63	13,303	744				62	13,086	732					
Montmagny, Que	1	1,353	26											
Montreal, Que	2,870	1,624,365	68,258				2,792	1,547,005	66,305					
Morrisburg, Ont	30	7,160	602				30	7,161	602					
Murray Harbour, P.E.I.	27	5,675	318				27	5,675	318					
Nanaimo, B.C.	2,796	600,677	40,357				2,732	598,081	39,718					
Napanee, Ont	7	550	7				7	481	9					
Nelson, B.C.	1,392	651,840	25,731				1,395	652,368	25,096					
Newcastle, N.B.	8	13,918	233	2	2,300	63								
New Campbellton, N.S.	9	551	57				9	551	56					
New Westminster, B.C.	840	131,826	7,796				852	123,127	7,710					
Niagara, Ont	395	419,645	28,372				123	94,254	7,396					
North East Harbour, N.S.	85	5,341	757	2	62	5	84	5,313	748					
North Head, N.B.	94	6,606	723	1	279	17	102	6,376	544	3	472	44		
North Sydney, N.S.	190	121,019	3,594	57	76,211	1,858	226	157,360	4,262	23	18,875	617		
Ocean Falls, B.C.	956	479,809	26,173				960	467,823	25,316					
Ottawa, Ont.	107	9,165	1,131				112	9,376	1,182					
Owen Sound, Ont	256	126,718	4,842	5	8,336	248	210	45,085	2,901	5	8,336	248		
Parrsboro, N.S.	181	14,251	1,061	2	543	31	188	11,896	1,119					
Parry Sound, Ont.	98	20,015	1,096				101	20,575	1,719					
Paspebiac, Que.	15	2,874	162	3	5,067	72	13	1,473	125					
Penetanguishene, Ont	71	15,766	1,496				70	15,942	1,417					
Pictou, Ont.	82	35,946	1,440				19	3,617	208					
Pictou, N.S.	173	29,661	2,271	1	150	31	170	27,355	2,226	1	150	18		
Pointe au Pic, Que.	22	14,058	707				20	12,200	1,000					
Pointe Edward, Ont	134	241,011	7,755				168	186,487	8,281					
Port Alberni, B.C.	267	74,964	3,952				263	74,987	3,942					
Port Arthur, Ont.	455	1,04.,856	26,247				447	1,058,821	24,892					
Port Burwell, Ont.	39	1,355	240				37	1,384	224					
Port Clyde, N.S.	91	5,348	768				91	5,348	767					

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

N° 19.—TABLEAU des navires britanniques et étrangers faisant le cabotage, etc.—*Suite.*

STEAMERS—VAPEURS—*Concluded.*

Ports and Outports — Ports et ports secondaires	Vessels Arrived—Arrivés						Vessels Departed—Partis					
	British—Britanniques			Foreign—Etrangers			British—Britanniques			Foreign—Etrangers		
	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage
Port Colborne, Ont.	449	578,466	8,610	62	28,809	995	366	394,493	6,840	61	33,512	894
Port Dalhousie, Ont.	315	183,253	5,622				320	181,078	5,057	1	382	11
Port Dover, Ont.	26	869	179	1	43	4	26	834	168			
Port George, N.S.	55	2,805	385				55	2,805	385			
Port Hawkesbury, N.S.	308	138,170	3,990				313	148,225	2,822			
Port Hastings, N.S.	81	10,980	957				63	7,179	705			
Port Hood, N.S.	207	16,006	2,264				207	16,006	2,264			
Port Hope, Ont.	7	72	11				3	73	12			
Port La Tour, N.S.	95	6,216	743				95	6,216	743			
Port Maitland, Ont.	3	101	11				3	101	11			
Port Morien, N.S.	6	420	51				6	420	51			
Port Mulgrave, N.S.	964	102,629	8,561	20	6,935	356	965	101,263	8,559	6	950	89
Port McNicoll, Ont.	255	721,615	9,875				249	689,603	9,713			
Port Simpson B.C.	108	65,069	3,718	10	3,595	209	108	65,069	3,718	10	3,595	209
Port Stanley, Ont.	86	2,820	522				94	3,063	571			
Port Wade, N.S.	2	95	13				2	95	13			
Port Williams, N.S.	9	1,125	72				9	1,125	72			
Powell River, B.C.	1,391	383,246	30,161				1,384	375,788	30,001			
Prescott, Ont.	231	234,231	20,889				199	238,821	14,227			
Prince Rupert, B.C.	1,020	603,701	33,471				1,783	604,847	31,974			
Pugwash, N.S.	1	65	16				1	65	6			
Quebec, Que.	597	746,497	30,976	80	75,655	2,048	612	1,099,241	50,824	41	41,571	1,061
Queenston, Ont.	279	271,197	19,044				538	586,264	39,224			
Rainy River, Ont.	12	626	77				6	316	37			
Richibucto, N.B.	10	189	34				8	153	31			
Rivière du Loup, Que.	11	6,710	889				11	6,710	889			
Rockport, Ont.	37	9,039	727									
Sackville, N.B.	1	26	6				1	26	6			
Sandy Point, N.S.	35	1,709	294	2	310	26	34	1,615	275	3	341	29
Sandwich, Ont.	3	159	7				2	91	4			
Sandy Cove, N.S.	278	6,049	866				278	6,063	870			
Sarnia, Ont.	337	566,076	7,284				394	308,004	8,439			
Sault Ste. Marie, Ont.	1,924	1,260,511	45,100				787	675,514	21,470			
Sherbrooke, N.S.	40	3,961	403				41	1,067	413			
Shediac, N.B.	3	277	18				3	1,713	26			
Sheet Harbour, N.S.	162	30,143	2,195				166	30,349	2,213			
Shelburne, N.S.	39	4,688	399	5	382	61	41	4,752	391	1	80	7
Shippegan, N.B.	10	241	54				18	294	62			
Sidney, B.C.	283	21,815	1,944	2	41	8	277	17,080	1,933	3	54	9
Smith's Falls Ont.	26	4,082	338				26	4,082	338			

Sorel, Que	514	875,836	33,564				521	874,988	33,368				
Souris, P.E.I	122	22,471	2,204				123	22,382	2,276				
Steveston, B.C	405	15,001	1,996				462	15,443	2,216				
Stewart, B.C	159	21,165	1,440	5	1,496	74	156	21,293	1,433	5	1,496	74	
St. Andrew's, N.B	385	19,224	1,492	3	337	25	420	19,630	1,769	2	21	4	
St. George, N.B	43	2,421	307				51	2,832	365				
St. John, N.B	1,227	351,568	17,510	5	7,847	136	1,212	421,750	21,434				
St. Martin's, N.B	6	378	40				14	890	59				
St. Peter's, N.S	104	11,094	1,168				104	11,094	1,217	2	319	62	
St. Stephen, N.B	128	7,519	640	9	244	22	126	7,347	625	6	225	16	
Sydney, N.S	700	658,373	16,034	81	117,886	2,542	670	631,469	15,161	37	55,125	1,202	
Thessalon, Ont	100	52,708	3,457				85	17,914	856				
Three Rivers, Que	508	871,707	22,501				506	871,680	22,496				
Thorold, Ont	27	21,668	486				11	6,397	192				
Toronto, Ont	1,177	605,341	20,350				1,028	493,401	24,878				
Trenton, Ont	5	1,404	72				5	1,404	72				
Truro, N.S	7	875	57				7	875	57				
Union Bay, B.C	1,074	223,573	12,632				1,077	232,616	13,489				
Valleyfield, Que	2	273	15				2	273	15				
Vancouver, B.C	9,516	2,862,990	176,685				9,817	3,416,246	185,447				
Victoria, B.C	3,291	2,063,442	101,590	25	565	100	3,330	1,691,899	96,118	23	539	97	
Walkerville, Ont	26	3,049	229	25	7,282	332	20	2,503	161	12	4,073	189	
Wallace, N.S	13	1,856	142				13	1,856	142				
Wallaceburg, Ont	34	4,705	294				47	6,826	314				
Welland, Ont	3	2,174	61	7	3,276	98	1	412	19	7	3,276	98	
West Dock, Ont	180	43,523	1,951				181	43,983	1,991				
Westport, N.S	172	27,810	2,493				170	27,788	2,416				
Weymouth, N.S	337	7,706	1,113	1	19	2	334	7,656	1,108	1	19	2	
White Horse, Y.T	106	35,072	1,657				120	37,189	1,732				
White Rock, B.C	28	1,213	143				27	788	100				
Wiarton, Ont	125	10,727	933				125	16,922	933				
Windsor, N.S	69	4,843	466				99	4,013	404				
Windsor, Ont	107	45,236	1,254	21	6,446	286	93	48,280	1,223	16	4,506	191	
Wolfville, N.S	72	5,083	449				72	5,145	451				
Yarmouth, N.S	443	33,212	3,034	8	4,099	206	506	33,066	3,571	15	343	60	
Total	61,859	27,711,784	1,209,243	594	521,771	12,381	59,004	26,414,821	1,153,433	454	350,310	8,624	

SAILING VESSELS—NAVIRES.

Albert, N.B	7	285	17				7	285	17				
Alberton, P.E.I	29	823	88				33	870	104				
Amherstburg, Ont	7	2,325	46				7	1,672	34				
Annapolis Royal, N.S	57	2,328	171				64	3,756	207	4	866	22	
Antigonish, N.S	78	2,086	170				74	1,859	159				
Arichat, N.S	195	6,927	604	1	82	5	203	7,386	642	1	100	7	
Baddeck, N.S	137	5,920	517	27	681	180	126	2,887	283	35	2,238	311	
Barrington Passage, N.S	36	1,552	112				45	2,047	145				
Barton, N.S	14	735	30				13	385	25				
Bath, Ont	5	438	15				5	850	17				
Bathurst, N.B	70	1,811	236	5	3,263	42	70	1,789	245				
Bear River, N.S	10	1,024	51				9	850	45				
Belliveau's Cove, N.S	40	969	75	2	38	4	44	2,770	100				
Belleville, Ont							2	380	8				
Bridgetown, N.S	1	5	2				3	269	12				

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

N° 19.—TABLEAU des navires britanniques et étrangers faisant le cabotage, etc.—*Suite.*

SAILING VESSELS—NAVIRES—*Continued.*

Ports and Outports — Ports et ports secondaires	Vessels Arrived—Arrivés						Vessels Departed—Partis					
	British—Britanniques			Foreign—Etrangers			British—Britanniques			Foreign—Etrangers		
	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage
Bridgewater, N.S.	19	3,167	89	9	4,368	68	19	3,167	89	9	4,368	68
Britannia Beach, B.C.	156	101,850	619				154	100,712	614			
Brockville, Ont.	1	481	4				1	481	4			
Buctouche, N.B.	31	1,812	99				33	1,883	100			
Campbellton, N.B.	20	703	68	5	4,297	64	19	967	57			
Canning, N.S.	17	687	36				18	687	36			
Canso, N.S.	282	12,856	1,112	1	376	6	290	11,842	1,126	3	838	18
Caraquet, N.B.	58	2,021	194				58	1,966	192			
Cardigan, P.E.I.	11	783	40				10	740	35			
Careross, Y.T.	2	56	4				2	56	4			
Charlottetown, P.E.I.	563	31,939	1,560				561	32,958	1,556			
Chatham, N.B.	102	6,659	371	1	177	7	99	4,618	331			
Chatham, Ont.	17	3,616	74				11	2,320	54			
Chester, N.S.	70	2,555	199				67	2,287	197			
Cheticamp, N.S.	45	1,340	154				46	1,402	155			
Chicoutimi, Que.	2	191	6				7	4,423	36			
Church Point, N.S.	3	91	6				6	1,022	21			
Clarenceville, Que.	5	35	10				5	35	10			
Clark's Harbour, N.S.	70	3,102	143				76	2,747	208			
Courtright, Ont.							5	1,812	30			
Crapaud, P.E.I.	18	1,466	58				20	1,641	66			
Dalhousie, N.B.	12	177	26				12	966	38	5	4,297	64
Dawson, Y.T.	26	3,767	71	1	211	3	20	3,759	60	3	1,052	9
Digby, N.S.	93	5,612	220				82	2,400	185			
Dorchester, N.B.	10	382	21				9	291	22			
Ellis Bay, Que.	1	12	2				1	12	2			
Esquimaux Point, Que.	52	2,639	215				52	2,639	215			
Forty Mile, Y.T.							7	178	12			
Fort William, Ont.	1	1,294	8									
Freeport, N.S.	82	2,357	210				68	1,800	160			
Gaspé, Que.	55	6,172	384				58	9,251	335			
Georgetown, P.E.I.	74	3,823	213				75	4,143	216			
Glace Bay, N.S.	26	663	78				27	823	81			
Grand Narrows, N.S.	4	209	9				4	209	9			
Great Village, N.S.	1	95	3				1	95	3			
Guysboro, N.S.	34	1,338	82				35	1,438	86			
Halifax, N.S.	1,186	100,401	5,290	5	1,044	29	922	88,462	3,196	28	10,922	168
Hantsport, N.S.	18	4,573	41	1	176	3	28	17,555	87	4	6,657	19
Hillsboro, N.B.	15	6,586	46	3	519	15	10	534	24			
Isaac's Harbour, N.S.	29	2,073	107	1	376	3	30	1,798	110	2	752	12

Joggin Mines, N.S.	10	721	32	2	694	11	7	407	19				
Kentville, N.S.	37	770	91				41	840	98				
Kincardine, Ont.	2	254	10				3	381	15				
Kingsport, N.S.	14	501	29				14	501	30				
Kingston, Ont.	14	7,890	80				21	13,315	124				
La Have, N.S.	86	8,099	614	1	219	4	108	12,645	595	2	536	13	
Lévis, Que.				1	99	2				2	209	4	
Liverpool, N.S.	52	7,706	547	21	6,860	126	30	3,691	159	3	935	17	
Lockeport, N.S.	19	1,066	71	13	173	34	21	1,055	68	10	141	27	
Louisburg, N.S.	133	29,868	438	7	798	72	136	29,017	511	4	176	10	
Lower East Pubnico, N.S.	71	1,803	170				77	1,908	194				
Lunenburg, N.S.	220	17,450	1,206	1	71	19	269	24,366	1,700				
Mabou, N.S.	6	363	21				6	363	21				
Magdalen Islands, Que.	115	6,546	471	8	698	92	120	6,765	463	8	698	92	
Mahone Bay, N.S.	36	2,190	152				52	4,110	305				
Maitland, N.S.	7	311	18				8	311	17				
Margaree, N.S.	24	589	51				26	630	56				
Margaretsville, N.S.	9	255	23				6	506	21				
Moteghan River, N.S.	20	598	48				22	1,374	59				
Middleton, N.S.	1	13	3				1	13	3				
Midland, Ont.	1	398	6				2	868	14				
Moncton, N.B.	72	3,807	189	2	367	8	69	3,621	180				
Montague Bridge, P.E.I.	55	2,911	173				48	2,480	146				
Montreal, Que.	700	214,225	2,688				661	177,772	2,394				
Murray Harbour, P.E.I.	55	1,698	123				56	1,793	125				
Napanee, Ont.	2	375	9										
Nelson, B.C.	753	491,400	2,259				625	422,346	1,875				
Newcastle, N.B.	33	1,484	89				25	788	61				
New Campbellton, N.S.	62	3,391	195				55	3,137	168				
New Glasgow, N.S.	84	1,765	212				80	1,769	204				
New Westminster, B.C.	119	76,157	461				121	81,591	490				
North East Harbour, N.S.	8	323	10				9	527	24				
North Sydney, N.S.	440	30,611	2,844				646	45,174	3,726	5	1,629	41	
Ottawa, Ont.	162	28,058	509	7	685	14	190	32,380	736				
Parrsboro, N.S.	450	27,837	1,260	23	3,837	106	413	27,821	1,226	8	1,147	39	
Paspebiac, Que.	51	2,715	208	2	555	13	52	2,329	188				
Percé, Que.	4	148	17				4	148	17				
Pictou, N.S.	389	23,328	1,082	3	1,819	27	389	21,991	1,077	4	1,937	33	
Point Edward, Ont.	18	8,504	149				19	9,739	160				
Port Arthur, Ont.	5	5,732	32				3	3,450	19				
Port Borden, P.E.I.							1	27	2				
Port Clyde, N.S.	17	391	39				19	509	43				
Port Colborne, Ont.	108	77,944	736				101	72,461	593				
Port Dalhousie, Ont.	7	4,581	40				2	681	9				
Port Elgin, N.B.	38	1,657	103				38	1,600	101				
Port George, N.S.	2	91	4				2	61	4				
Port Hawksbury, N.S.	173	11,630	631				180	13,576	632				
Port Hastings, N.S.	40	652	106				40	1,670	107				
Port Hood, N.S.	41	1,912	143				41	1,919	143				
Port Hope, Ont.							1	185	5				
Port La Tour, N.S.	24	857	71				23	900	65				
Port Morien, N.S.	2	122	14				2	122	14				
Port Mulgrave, N.S.	23	3,058	88	1	1,161	11	20	2,828	76	1	1,161	11	
Port Wade, N.S.	11	728	34				12	694	34				
Port Williams, N.S.	16	816	43				16	816	43				
Powell River, B.C.	5	3,903	17				5	3,903	17				
Prescott, Ont.							2	1,196	14				
Prince Rupert, B.C.	47	12,482	96	5	685	36	74	17,475	149	2	642	18	
Pugwash, N.S.	28	1,183	74				28	1,183	74				
Quebec, Que.	283	32,581	993	7	289	27	298	30,034	1,024	70	7,532	164	

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

N° 19.—TABLEAU des navires britanniques et étrangers faisant le cabotage, etc.—*Fin.*

SAILING VESSELS—NAVIRES.

Ports and Outports — Ports et ports secondaires	Vessels Arrived—Arrivés						Vessels Departed—Partis					
	British—Britanniques			Foreign—Étrangers			British—Britanniques			Foreign—Étrangers		
	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage	Vessels — Navires	Tons Register — Tonnage enregistré	Crew — Equipage
Richibucto, N.B.	39	1,557	101				48	1,669	160			
River Hébert, N.S.	2	84	4									
River John, N.S.	1	10	2				1	10	2			
Salmon River, N.S.	2	82	9	1	5	2	3	153	9			
Sandy Point, N.S.	16	696	56	3	986	18	20	1,197	75	11	2,754	62
Sandy Cove, N.S.	20	700	67				20	748	75			
Sarnia, Ont.	98	33,944	508				132	47,323	719			
Sherbrooke, N.S.	7	596	30	3	1,128	18	4	230	14	1	376	6
Shediac, N.B.	42	1,188	103	1	224	7	44	983	108			
Sheet Harbour, N.S.	19	665	53	1	449	8	22	711	64			
Shelburne, N.S.	14	877	59	2	164	28	18	1,621	66			
Shippegan, N.B.	120	2,875	492	1	247	7	126	2,940	512	1	247	7
Sidney, B.C.	18	8,876	41				18	8,376	41			
Sorel, Que.	23	14,201	130				7	4,725	36			
Souris, P.E.I.	99	5,201	305				89	4,601	269			
St. Andrews, N.B.	2	142	10				3	128	9	3	452	14
St. George, N.B.	9	592	27				6	68	12			
St. John, N.B.	445	29,471	1,261	1	276	5	461	18,522	1,219			
St. John's, Que.	3	299	6				9	359	18			
St. Martins, N.B.	43	2,026	108				36	1,597	90			
St. Peter , N.S.	40	2,400	120				41	2,527	131			
St. Peters, P.E.I.							1	12	2			
St. Stephen, N.B.	4	209	13				3	150	9	2	636	9
Summerside, P.E.I.	155	7,667	429				153	7,717	439			
Sydney, N.S.	729	60,305	2,850	2	264	16	506	43,627	1,723	1	132	8
Three Rivers, Que.	41	9,026	130				40	9,163	126			
Thorold, Ont.	7	8,014	46				6	6,900	39			
Tignish, P.E.I.	19	374	67				21	406	63			
Toronto, Ont.	132	35,164	408				136	34,773	494			
Truro, N.S.	124	8,238	362				128	9,004	374			
Tusket, N.S.							1	10	3			
Vancouver, B.C.	1,060	901,134	4,796				1,061	908,142	4,816			
Victoria, B.C.	64	50,394	271				59	47,580	238			
Walkerville, Ont.	31	12,304	218				24	6,159	108			
Wallace, N.S.	7	882	20				7	882	20			
Wallaceburg, Ont.	15	4,137	80				17	3,838	74			
Welland, Ont.	1	481	4				1	481	4			
Westport, N.S.	60	1,676	144	9	156	18	58	1,732	154	14	266	28
Weymouth, N.S.	125	3,791	280	1	204	5	130	3,811	338			
White Horse, Y.T.	16	3,429	22				16	2,953	16			

| | | |

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Concluded.*

N° 19.—TABLEAU des vaisseaux anglais et étrangers employés pour le cabotage, etc.—*Fin.*

RÉCAPITULATION.

	Steamers. Vapeurs.			Sailing Vessels. Voiliers.			Total. Total.		
	Vessels. Navires	Tonnage. Tonnage	Crew. Equipage.	Vessels. Navires	Tonnage. Tonnage.	Crew. Equipage.	Vessels. Navires	Tonnage. Tonnage.	Crew. Equipage.
Arrived—Arrivés									
British—Britanniques	61,859	27,711,784	1,209,243	13,143	2,785,198	48,798	75,002	30,496,982	1,258,041
Foreign—Etrangers	594	521,771	12,381	204	50,099	1,227	798	571,870	13,608
Total	62,453	28,233,555	1,221,624	13,347	2,835,297	50,025	75,800	31,068,852	1,271,649
Departed—Sortis									
British—Britanniques	59,004	26,414,821	1,153,433	12,859	2,660,725	46,155	71,863	29,075,546	1,199,588
Foreign—Etrangers	454	350,310	8,624	262	57,950	1,400	716	408,260	10,024
Total	59,458	26,765,131	1,162,057	13,121	2,718,675	47,555	72,579	29,483,806	1,209,612

DESCRIPTION OF VESSELS—DESCRIPTION DES VAISSEAUX.

	Arrived—Arrivés.		Departed—Sortis.		Total.	
	Vessels. Navires.	Tonnage. Tonnage.	Vessels. Navires.	Tonnage. Tonnage.	Vessels. Navires.	Tonnage. Tonnage.
Steamers—Vapeurs—						
Screw—Hélice	56,922	23,963,228	54,334	22,721,342	111,256	46,684,570
Paddle—Aubes	3,737	3,323,107	3,323	3,096,182	7,060	6,419,289
Sternwheel—Roue à l'arrière	1,794	947,220	1,801	947,607	3,595	1,894,827
Total	62,453	28,233,555	59,458	26,765,131	121,911	54,998,686
Sailing vessels—Voiliers—						
Ships—Bâtiments	3	3,884	1	1,603	4	5,487
Barques—Barques	3	2,712	6	6,665	9	9,377
Barquentines—Petite barques	2	401	2	920	4	1,321
Brigantines—Brigantins						
Schooners—Goélettes	9,625	646,828	9,465	632,111	19,090	1,278,939
Sloops—Corvette	174	10,820	182	7,218	356	18,038
Barges—Barges	3,540	2,170,652	3,465	2,070,158	7,005	4,240,810
Total	13,347	2,835,297	13,121	2,718,675	26,468	5,553,972
Grand total	75,800	31,068,852	72,579	29,483,806	148,379	60,552,658

REPORT

OF THE

DEPARTMENT OF HEALTH

FOR THE

Fiscal Year ending March 31, 1920

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1921

[No. 12—1921]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith for the information of Your Excellency and the Parliament of Canada, the Annual Report of the Department of Health, being for the year ended March 31, 1920.

I have the honour to be, sir,

Your Excellency's most obedient servant,

J. A. CALDER,

Minister of Health.

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REPORT

OF THE

DEPARTMENT OF HEALTH

FOR THE FISCAL YEAR ENDING MARCH 31, 1920

Ottawa, December 17, 1920.

Honourable J. A. Calder,
Minister of Health,
Ottawa, Ont.

Sir,—I have the honour to report on the Department of Health for the year ending March 31, 1920, under the following headings:—

1. Quarantine Service.
2. Immigration Medical Service.
3. Food and Drug Laboratories.
4. Opium and Narcotic Drugs.
5. Proprietary or Patent Medicines.
6. Marine Hospitals' Service.
7. Venereal Disease Control.
8. Publicity and Statistics.
9. Financial Statement.
10. Child Welfare.
11. Housing.

(1) QUARANTINE SERVICE

This branch of the public service was transferred from the Department of Immigration and Colonization to the Department of Health on September 1, 1919.

During the year 1919-20, the following Quarantine Stations were kept in operation:—

Atlantic Coast.—Halifax, North Sydney and Louisburg, in the province of Nova Scotia; Chatham and St. John, in the province of New Brunswick; Charlottetown, in the province of Prince Edward Island; and Grosse Isle, in the province of Quebec.

Pacific Coast.—William Head, Victoria, B.C.

The total number of vessels inspected during the year was 1,916, and the number of persons examined 560,123. In the year 1918-19, 1,450 vessels were inspected and 277,910 persons examined.

During the year none of the graver quarantinable diseases were found at the various Quarantine Stations, with the exception of smallpox, of which there was one case at Chatham, one at Charlottetown, and two at William Head.

The following is a summary of the reports received from the medical officers at the different Quarantine Stations, giving the number of vessels inspected, passengers examined, diseases treated, detentions, etc.

At Halifax, 481 vessels were inspected and 277,874 persons examined. Of these 25,323 were cabin passengers, 18,830 second-class, 179,874 steerage, and 53,778 crew. Twenty-seven cases were admitted to hospital and 15 contacts were detained. The diseases found were measles, la grippe, mumps, chickenpox, diphtheria and paratyphoid.

At North Sydney, 255 vessels were inspected and 9,431 persons examined. No quarantinable disease was found.

At Louisburg, 82 vessels were inspected and 4,391 persons were examined. No quarantinable disease was found.

At St. John, 228 vessels were inspected and 60,130 persons were examined, of which 7,901 were cabin passengers; 7,952 intermediate, 25,187 steerage, 9 cattlemen, 26 stowaways, 22 distressed seamen, 50 deckers and 18,983 crew. Thirty-six patients were admitted to hospital and 16 contacts detained. The diseases found were typhoid, diphtheria, scarlet fever, measles, influenza and chickenpox. One death occurred from measles.

At Chatham, 30 ships were examined and 610 persons. One case of smallpox was detained, the crew vaccinated and the steamer quarantined. No other quarantinable disease was found.

At Charlottetown three vessels were inspected. One case of smallpox was discovered which was taken to the quarantine hospital. The ship was quarantined till the man was discharged.

At Grosse Isle, 363 vessels were inspected and 141,260 persons examined, including 4,218 cabin passengers, 30,071 intermediate, 70,633 steerage, 36,286 crew, 21 cattlemen, and 31 stowaways. There were 208 admissions to hospital, including mumps, influenza, scarlet fever, variola, measles, diphtheria, dysentry, enteric fever and pneumonia. Hundreds were vaccinated.

At William Head, 174 ships were inspected and 55,977 persons examined, including 9,375 cabin passengers, 19,091 steerage and intermediate, 24,401 crew, 16 stowaways, and 3,094 troops. Three ships were quarantined, one for smallpox and two for influenza. The admissions to hospital (28) were for influenza, pneumonia, smallpox, measles, diphtheria, scarlet fever and mumps. There were four deaths during the year, two from smallpox and two from influenza.

Leper Lazaretto, Tracadie, N.B.—At the end of March, 1920, there remained 13 patients at this Lazaretto, seven males and six females. During the year two were admitted, one from Tracadie, the other Lameque, N.B. Two deaths occurred—both were in the last stages of the disease. Of the 13 patients remaining under treatment, 11 are French Canadian, one Icelandic and one Russian.

Leper Lazaretto, D'Arcy Island, B.C.—During the year, four lepers, all Chinese, were treated at this Lazaretto. One had so improved under the gynocardate treatment that he was released as cured on the 10th November, 1919, after all bacteriological tests had proved negative.

PUBLIC WORKS HEALTH ACT

The reports from the inspectors are to the effect that the medical services, sleeping quarters and board given to the men employed on the various works are quite satisfactory. The department is informed that the general good health of the men and the excellent sanitary condition of the various camps are evidence of the intention of the contractors to comply with the regulations of the Public Works Health Act.

(2) IMMIGRATION MEDICAL SERVICE

This branch of the public service was transferred from the Department of Immigration and Colonization to the Department of Health on September 1, 1919.

The immigration quarters at the various ocean ports, which were taken over by the military authorities during the war, were utilized during the present year by the Clearing Depot Services in connection with the general demobilization of ex-service men returning to this country with their dependents. As a consequence, the pre-war facilities for medical examination of immigrants not having been restored, that examination was, perhaps, not as satisfactory as it might otherwise have been. Apart from this, the unavoidable mingling of immigrants and soldiers contributed, in no small degree, to this somewhat unsatisfactory state of affairs.

Since the termination of the war a considerable increase in the number of immigrants has become very apparent, this being especially true in regard to British immigration.

While the Department of Health has not, as yet, had sufficient time to define and adopt a policy which will meet a long-felt want for more adequate means for the inspection of immigrants, it has, nevertheless, been able to secure the apointment of a few full-time medical officers at the ports of St. John and Halifax in lieu of those who were only part-time officers before the war. This innovation was made in the fall of 1919, and as the new appointees lacked training, the results from these few months could not be expected to be very appreciable. From what has been observed, however, this new policy is rather encouraging.

Statement showing number of immigrants inspected at the Atlantic and Pacific ports during the year 1919-20:—

Atlantic—	
New York, Boston and Portland	4,019
St. John	13,453
North Sydney	414
Halifax	11,161
Quebec	37,125
Total	66,172
Pacific—	
Vancouver	674
Victoria	834
Total	1,508

STATEMENT OF DETENTIONS AND REJECTIONS FOR MEDICAL CAUSES AT OCEAN PORTS FOR FISCAL YEAR 1919-20.

Causes.	Halifax.		Montreal.		New York.		Portland.		St. John.		Quebec.		Vancouver.		Victoria.		Totals.
	Det.	Rej.	Det.	Rej.	Det.	Rej.	Det.	Rej.	Det.	Rej.	Det.	Rej.	Det.	Rej.	Det.	Rej.	
Abortion											4						4
Adenitis											1						1
Amputated limb											5						5
Anaemia	1	1									2						4
Appendicitis											1						1
Asthma											1						1
Bronchitis											1						1
Cellulitis											1						1
Confinement									1		4						5
Conjunctivitis															6		6
Constipation											1						1
Epilepsy	1	1									2	1					5
Fractured rib											1						1
General debility											5						5
Gonorrhea					1	1					1	1			1	1	6
Heart disease					1	1					4	1					7
Imbecile															1	1	2
Impetigo											3						3
Infected arm											1						1
Insanity					1	1											2
Iritis											1						1
Measles	8								4								12
Medical observation	1								11		13						25
Mental observation											5	2					7
Mentally deficient	1								6	1							8
Miscarriage											5						5
Neurasthenia											1						1
Neuritis											2						2
Observation of eyes											2	1					3
Physically defective									1								1
Pleurisy	1										1						2
Pneumonia											1						1
Poor physique											4	1					5
Scabies											1				18	2	21
Scarlet fever	1																1
Seasickness											1						1
Trachoma	1	1											1				3

Tuberculosis										6	2					8
Ulcer of stomach										1						1
Venereal disease										2	1					3
Totals	15	3			3	3		23	1	84	10	1		26	4	173

SUMMARY OF DETENTIONS AND REJECTIONS AT OCEAN PORTS.

	Detentions.	Rejections.
Halifax	15	3
Montreal	..	..
New York	3	3
Portland	..	..
St. John	23	1
Quebec	84	10
Vancouver	1	..
Victoria	26	4
Totals	152	21

Total Detentions.....152
" Rejections..... 21

STATEMENT OF DEPORTATIONS FOR MEDICAL CAUSES, AFTER ADMISSION TO CANADA, AT OCEAN PORTS FOR FISCAL YEAR 1919-20.

Causes.	Halifax	Montreal	NewYork	Portland	St. John	Vancouver	Victoria	Total
Drug habit					1			1
Epoilepsy		1			1			2
Feeble-minded		1			5			6
Insanity	1	32	14	2	14	3	1	67
Nephritis		1						1
Neurasthenia					1			1
Syphilis			1					1
Tuberculosis		1		1	4			6
Total	1	36	15	3	26	3	1	85

SUMMARY OF DEPORTATIONS AT OCEAN PORTS

	Deport
Halifax	1
Montreal	36
New York	15
Portland	3
St. John	26
Vancouver	3
Victoria	1
Total deportations	85

(3) FOOD AND DRUG LABORATORY

This branch of the service was originated in 1884, under the Department of Inland Revenue, by the appointment of the late W. H. Sugden Evans as Chief Analyst. In September, 1918, the branch was transferred to the Department of Trade and Commerce, and on September 1, 1919, to the Department of Health. The present is therefore the first report of work done under the ægis of the Department of Health.

The organization of this branch involves central laboratories at Ottawa with a technical staff (normal) of thirteen permanent employees, and three sub-laboratories, situated at Halifax, Winnipeg and Vancouver, each staffed by an analyst in charge and one assistant. It is hoped that provision will be made during the coming year for a fourth sub-laboratory at Montreal. Occasional assistance in routine work is supplied.

The sub-laboratories have proved themselves of value, not only in reducing the work which has heretofore been done at Ottawa, but in enabling work to be performed and reported upon with greater promptitude. This is particularly of importance where consignments of imported goods are held up for examination as a condition of delivery.

The analyst in charge at Halifax reports work done during the year as follows. I may state that this sub-laboratory has been in commission since December, 1914:—

"According to the usual custom I submit herewith a detailed statement of work done, etc., in this sub-laboratory during the fiscal year ending March 31, 1920.

No. Samples Received	Number Reported	Description	Date Reported
	12	Chop feed	Apr. 9, 1919
	35	Cloves, whole and ground	May 19
20	20	Sweet spirits of Nitre	June 7
22	22	Flour	" 16
4	4	Glutten flour	" 26
39	39	Seidlitz Powders	" 26
38	38	Beer, ale, etc	Aug. 13
25	25	Packaged currants	" 13
62	62	Butter	Nov. 12
15	15	Registered stock feed	Dec. 12
115	115	Summer drinks	" 12
7	7	Mapple butter	" 18
56	56	Baking powder	Jan. 21, 1920
75	75	Black pepper	" 23
70	70	White pepper	" 23
13	.....	Fertilizers	.....
561	595		
66	66	Special samples analyzed.—	
		26 Alcohol tests in beer, etc.	
		10 Customs export and imports—	
		7 Beans.	
		1 Sardines.	
		2 Export beer.	
		12 Butter, for Dept. of Agriculture.	
		6 Wood-pulp.	
		3 Oil shale.	
		3 Epsom salts.	
		2 Water.	
		1 Fertilizer.	
		1 Propeller bronze.	
		1 Oil.	
		1 Gasoline.	
627	661		

SUMMARY.

Total number of samples received		627	
" " reported		661	
Work on hand March 31, 1920		13	
Fees collected for analysis of special samples above mentioned			$ 136 00
Number of prosecutions ordered		37	
Sweet spirits of nitre	2		
Butter	2		
Maple butter	6		
Pepper	19		
Registered stock feed	1		
Baking powder	7		
	37		
Number of prosecutions completed		14	
" " lost		0	
" " still pending		23	
Fines collected and deposited			$ 235 00
Costs " "			141 00
Total revenue from fines and costs			376 00
Total receipts		$ 512 00	

(Sgd.) G. C. FORWARD
Analyst in Charge

The analyst in charge at Winnipeg reports as below. This sub-laboratory has been in commission since April, 1915:—

"I beg to report as follows for the Winnipeg laboratory during the fiscal year ended March 31, 1920. The work reported is as follows:—

INSPECTORS' SAMPLES

Fertilizers	9
Olive oil	15
Spirit of nitrous ether	6
Maple butter	6
Flour	26
Seidlitz powders	4
Maple syrup	3
Gluten flour	1
Camphor	2
Packaged currants	14
Malted liquors	14
Butter	70
Registered stock feeds	25
Shorts	3
Baking powders	54
White pepper	87
Black pepper	98
Egg albumen	1
Inspectors' samples	495

OCCASIONAL SAMPLES

Samples submitted for alcohol determinations	90
Samples from shipments in Customs Bonds—	
Beans	23
Evaporated apples	1
Samples submitted by Department of Agriculture—	
Butter	39
Canned peas	29
Vinegar	4
Water	1
Milk	1
Cream	1
Glauber salts	1
Marmalade	1
Rum	1
Gophericide	1
Occasional samples	205
Inspectors' samples	495
Total samples	700

During the year a shipment of Chinese egg albumen was stopped in transit and ordered shipped out of Canada as the product was found to contain large excess of zinc. Seizures were made of several small stocks of cottonseed oil being sold as pure olive oil. A shipment of some 5,600 pounds of "maple syrup" was seized and declared forfeited to the Crown, the product being found not to be pure maple syrup.

(Sgd.) E. L. C. Forster,
Analyst in Charge.

SESSIONAL PAPER No. 12

Mr. J. A. Dawson, analyst in charge at Vancouver, which sub-laboratory has been in commission since February, 1915, reports as follows:—

I submit herewith statement of samples examined during the fiscal year 1919-20:—

Date Reported	Description	J.A.D.	W.H.H	Total
April 7, 1919	Glutten flour	.....	2	2
24	Sweet spirits of nitre	.....	11	11
May 6	Seidlitz powder	9	.....	9
	Sweet spirits of nitre	.....	10	10
June 4	" "	.....	10	10
25	Fertilizers	.....	22	22
30	Flour	.....	12	12
July 9	Gluten flour	.....	2	2
Sept. 3	Seidlitz powders	20	.....	20
13	Currants	33	.....	33
18	Gum camphor	17	.....	17
Oct. 22	Butter	.....	53	53
Nov. 7	Beer	25	.....	25
Dec. 11	Registered stock feeds	.....	60	60
Feb. 11, 1920	Summer drinks	.....	78	78
Mar. 23	Baking powders	58	.....	58
27	Pepper	.....	139	139
	Special samples	162 404	399 203	561 607
	Totals	566	602	1,168

SPECIAL SAMPLES

Alcohol	2	Maple butter	6
Apples, evaporated	9	" flavouring	4
Arsenic in meat	1	" sugar	5
Beans	515	" syrup	5
Beer	3	Marshmallow paste	1
Bran	1	Milk, evaporated	6
Butter	2	Milk, whole	68
Coffee	1	Oil, salad	1
Corn, canned	2	Oilcake	1
Egg, dried albumen	14	Soup, canned	1
" " yolk	5	Sugar	2
" " whole	4	Vanilla extract	2
Epsom salts	2	Whisky	1
Face cream	1	Wine	2
Feed, stock	2		
Fertilizer	2	Total	607
Fish meal	1		
Fish paste	1		

Sodium hydroxide solution supplied..2 Winchesters

(Sgd.) J. A. Dawson,
Analyst in Charge.

The work done in this branch falls naturally under two heads which may be designated as police work and investigatory work. Most of the work done at the sub-laboratories is of the first-named order, and is concerned with supplying the evidence necessary for conviction in violations of the various Acts administered by this department. The investigatory work is of no less importance, and has for its object the accumulation of such information regarding the nature of specific classes of foods, drugs, fertilizers, etc., as may enable standards to be defined, and limits of variation to be fixed, in accordance with the requirements of these Acts. Owing to the limitations of staff at the sub-laboratories, and to the necessity for immediate supervision by the chief analyst, this class of work has been mainly carried out at the central laboratories at Ottawa.

On occasion, however, some work of this character has been performed at the sub-laboratories and I would refer in illustration to the excellent report of Mr. Dawson (Vancouver) upon lard and lard substitutes, published as Bulletin No. 414.

I may here draw attention to the recognized advantages of specific standards for foods, provision for such standardization being made by section 26 of the Adulteration Act.

When an article is offered as milk, butter, pepper, flour, vinegar, etc., the purchaser should know that such article possesses a certain food value, is, in other words, a standard article of its kind. It may not be the very best of its kind, but it must not fall below a certain fixed minimum value designated as the legally established standard. It is unnecessary to describe it as pure or genuine, because the mere fact that it meets standard requirements makes it pure and genuine, in a legal sense. Conversely, if in any respect it fails to meet the established standard, this fact is sufficient to condemn it as adulterated, in the sense in which this term is used in the Act.

The practical value of standardization is seen when we come before the courts of law. Thus an article sold as milk must contain at least 3.25 per cent milk fat. It it not sufficient that the material in question has been produced by a cow to constitute it a legally vendable milk. There are doubtless many cows which at certain periods of the year and under certain conditions of age, time elapsed since calving, general health and individual idiosyncracy, yield a milk of less than 3·25 per cent fat. In one sense this product may be regarded as milk, but in the legal sense, it is not milk, i.e., not standard milk, and, if offered as such is open to penalization under the Act, just as truly as though it had been skimmed or watered. Did no legal standard exist as a guide to the analyst in his decision, and the court in its findings, it is easy to conceive that almost endless litigation might be involved in every case of prosecution for adulterated milk.

There is another aspect of the matter, namely, the temptation of the producer to work down to the legal standard, and thus to make market samples no better than the legal standard demands. This phase of the question need not be discussed here further than to say that, as a matter of fact, the tendency to place on the market foods which, while they meet our standards, are as close to those standards as the law allows, must be acknowledged as governing production. For example, we forbid the presence of more than 16 per cent of water in butter, and inspection of the article proves that manufacturers place on the market very little butter containing notably less than 16 per cent of water, although some years ago a great deal of market butter contained no more than 8 to 12 per cent and occasional samples of farm-made butter are found to-day to contain no more than this. The advantages of standardization are, however, so greatly in excess of its disadvantages, if such actually exist, that justification for legal standards is acknowledged.

It is always within the power of the producer of a super-standard article to describe it in such a way as to claim for it any superiority actually possessed by it.

Standards have been fixed for a great number of the most important food species; and these standards will continue to be improved and made more definite by revision as our knowledge of the subject increases. It is, of course, very important that, in the fixation of standards, the numerical constants accepted, shall not be such as to exclude from commerce any really valuable material, or to hamper production unnecessarily. Such action would tend unduly to raise the cost of living.

The only article investigated during the past year, with a view to standardization, and in regard to which our work justifies finality, is cloves, defined by Order in Council of May 12, 1919.

A reason for the limited amount of investigatory work performed during the year is found in the fact that three analysts left the employ of the department, for

higher salaries offered them by private employers, and a fourth was absent from October, 1919, being granted leave,, without salary, that he might carry out investigation as a post-graduate student, at the University of Toronto. It has been found impossible to fill existing vacancies with properly qualified men, at the salaries offered by the Civil Service Commission.

An important change in the inspectoral staff has been made during this year. Heretofore the work of inspection has been performed by men whose chief official duties were of another kind, related to the excise or to the preventive service. During this year, eleven out of a nominal staff of twenty-five inspectoral districts have been placed in charge of inspectors who give their whole time to this duty; and it is hoped that similar replacements by full-time men will be made in the remaining districts.

The work done at Ottawa during the fiscal year now reported comprises the following:—

OCCASIONAL SAMPLES

Acetaldehyde	2	Maple sugar	11
Acid	3	Maple syrup	17
Ale	1	Milk	68
Alcohol	10	Milk powder	1
Aspirin	2	Molasses	1
Bacon	1	Mustard	5
Baking powder	5	Oil	26
Beans	92	Oilcloth	2
Beer	4	Olive oil	25
Butter	190	Oysters	1
Cake	3	Paraldehyde	1
Calcium carbide	1	Paint	26
Castor oil	1	Patent medicines	36
Cheese	14	Peanut butter	1
Chocolate cake	7	Peas	5
Coffee	4	Pepper	3
Colouring matter	3	Pepper shells	1
Confectionery	2	Poppy seed	1
Cocoa	9	Preservative	1
Coca cola	5	Rennet	1
Crabapple oil	1	Salad oil	4
Cream	1	Salmon	25
Cream of tartar	3	Salt	1
Crotonaldehyde	1	Screenings	3
Currants	1	Sewage	10
Disinfectant	1	Snuff	1
Dubbin	1	Soap	25
Dutch cleanser	1	Stock feed	21
Enamels	6	Sugar	11
Evaporated egg	1	Sweet oil	1
Fertilizers	260	Tags	2
Flavouring extracts	2	Tar	1
Floor wax	18	Turpentine	1
Flour	213	Urine	2
Gasolene	2	Vanilla extract	7
Ginger	1	Varnish	8
Honey	6	Vinegar	2
Ink	4	Water	12
Izal	2	Weed seeds	1
Jam	5	Wine	2
Lime-juice	2		
Linseed oil	1	Total	1,275
Liquors	3		
Maple butter	7		

A critical examination of labels to the number of 205 has been made and reported.

The following reports have been issued in bulletin form:—

BULLETINS ISSUED

No. of Bulletin	Nature	Number of Samples
427	Clove, Whole and Ground	219
428	Chop Feed	120
429	Lime-Juice	60
430	Linseed Oil and Substitutes	144
431	Sweet Spirits of Nitre	184
432	Turpentine as a Paint Material	118
433	Seidlitz Powders	198
434	Diabetic Foods	28
435	Currants	111
436	Butter	302
437	Beer	153
438	Registered Stock Food	205
	Total	1,842

Prosecutions instituted number 239. Nature of samples:—

Baking power	21	Milk	43
Butter	26	Mustard	1
Chocolate cake	3	Olive oil	13
Chop feed	13	Pepper	9
Coffee	1	Registered feed	30
Cream of tarter	4	Salad oil	1
Currants	3	Seidlitz power	10
Evaporated milk	3	Sweet spirits of nitre	24
Fertilizers	4	Table sugar	2
Lime-juice	12		
Maple butter	10	Total	239
Maple sugar	4		
Maple syrup	2		

(4) OPIUM AND NARCOTIC DRUGS

On December 31, 1919, Chapter 25, entitled "An Act to Amend the Opium and Drug Act," 10 George V, was brought into force by proclamation of the Governor in Council, published in the issue of the *Canada Gazette* of the aforementioned date.

This Act superseded Orders in Council P.C. 1011 and P.C. 1012, under the authority of which the Department of Trade and Commerce administered the licensing of the imports and exports of narcotics up to December 31, 1919.

On February 26, 1920, Order in Council No. P.C. 433 was passed, placing the administration of the Opium and Narcotic Drug Act, Chapter 17, 1-2, George V, under the control and supervision of the Department of Health.

Prior to this date, the Opium and Drug Act was not under the supervision of any one department.

On February 26, 1920, Order in Council P.C. 434 was passed adding to the schedule of the Opium and Drug Act, after the word "Opium,"—"or its preparations, or any opium alkaloids, or their derivatives; or any salts or preparations or opium alkaloids or their derivatives."

This branch was only established on the 1st January, 1920, and its operations were very limited during the first three months of its existence.

(5) PROPRIETARY OR PATENT MEDICINES

At the commencement of the fiscal year April 1, 1919, this branch, under the control of the Department of Trade and Commerce, was administering the Proprietary or Patent Medicine Act of 1908, the Agricultural Fertilizers Act of 1909, and the Commercial Feeding Stuffs Act of 1909.

The fundamental principle of the Proprietary or Patent Medicine Act of 1908 was to control the proportions of deleterious drugs in proprietary or patent medicines, or require the manufacturers to declare the presence of such drugs upon the labels and wrappers. The drugs referred to were enumerated in the schedule to the law.

The object of the Agricultural Fertilizers Act of 1909 and the Commercial Feeding Stuffs Act of 1909 was to require the manufacturers to place upon the packages, or tags attached thereto, the fertilizing value of his fertilizer, and the feeding value of his feeding stuff in terms prescribed by these Acts.

The two first-named laws were revised by amendments which became operative on the 7th July, 1919, and the 1st June, 1920, respectively.

A few of the important changes included in the new Proprietary or Patent Medicine Act affecting medicines subject to its provisions, are as follows:—

1. A separate registration number, the fee for which is $2, must be procured for each internal and external medicine, and an annual license obtained at the rate of $1 per preparation.

2. The use of opium, or any of its derivatives, is forbidden in internal medicines.

3. The proportions of scheduled drugs contained in each medicine per maximum dose must be furnished the department under affidavit, and also printed on the labels and wrappers.

4. Preparations must not be represented as "cures;" and misleading and exaggerated avertisements are prohibited.

5. An advisory board was established for the purpose of fixing the single and daily doses of scheduled drugs, and deciding the medication of preparations containing alcohol in excess of 2½ per cent.

The amended Fertilizers Act increased the license fee to $8, $16, or $24 per brand, according as the fertilizer contains one, two, or three of the following ingredients, that is to say, nitrogen, phosphoric acid and potash. The Act of 1908 required that only a single license fee of $5 be paid annually, in order to procure a license authorizing the sale of all brands registered by a manufacturer or his agent.

This branch was taken over by the Department of Health on the 1st September, 1919.

(6) MARINE HOSPITALS SERVICE

This branch of the public service was heretofore administered by the Department of Marine, and was transferred to the Department of Health on the 1st November, 1919.

Under the provisions of Chapter 113, Canada Shipping Act, Part V (Sick and Distressed Mariners), dues of 1½ cent per ton, registered tonnage, are levied on every vessel entering any port in the provinces of Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and British Columbia. Vessels of a burden of 100 tons or less pay dues once in each calendar year; those of more than 100 tons, registered tonnage, pay three times in each calendar year.

The officers and seamen of all fishing vessels not registered in Canada do not pay dues, nor participate in the benefits accruing therefrom, but such vessels registered in Canada may pay dues and participate in the benefits.

The Act does not apply to Ontario, therefore no sick mariners' dues are collected from that province.

In consideration of the payment of these dues, sick and distressed mariners belonging to vessels on which said duty has been paid are entitled to gratuitous treatment. The expenditure for such treatment is defrayed out of the appropriation voted by Parliament for that purpose.

Quebec.—In the province of Quebec sick mariners are treated at the following places:—

Quebec.—Jeffrey Hale and Hotel-Dieu hospitals.
Montreal.—Montreal General and Notre Dame hospitals; contagious diseases at Alexandra and St. Paul's hospitals.
Three Rivers.—St. Joseph's hospital.
Chicoutimi.—Hotel-Dieu St Valier.
Murray Bay.—St. Joseph hospital.
Sorel.—General hospital.
St. Johns.—St. John hospital.

Nova Scotia.—Marine hospitals are maintained at Louisburg, Lunenburg, and Sydney.

Halifax.—Seamen are treated at the Victoria General hospital; contagious diseases are treated at the City Health Board hospital.
Pictou.—Pictou Cottage hospital.
North Sydney.—Hamilton Memorial hospital.
New Glasgow.—Aberdeen hospital.
Antigonish.—St. Martha's hospital.
Windsor.—Payzant Memorial hospital.
Amherst.—Highland View hospital.
Yarmouth.—Yarmouth hospital.
Springhill.—Springhill Cottage hospital.

New Brunswick.—A Marine hospital is maintained at Douglastown.

St. John.—Seamen are treated at the General Public hospital; contagious diseases are treated at the City Health Board hospital.
Moncton.—Moncton hospital.
Campbellton.—Hotel Dieu hospital.
Bathurst.—James Dunn hospital.
St. Stephens.—Chipman Memorial hospital.

Prince Edward Island.—

Charlottetown.—Charlottetown hospital; Prince Edward Island hospital.
Summerside.—Prince County hospital.

British Columbia.—

Victoria.—St. Joseph's hospital.
Vancouver.—St. Paul's hospital.
Prince Rupert.—Prince Rupert General hospital.
New Westminster.—St. Mary's hospital.
Nanaimo.—Nanaimo hospital.
Ladysmith.—Ladysmith hospital.
Chemanius.—Chemanius hospital.
Union Bay.—Cumberland hospital.

Where there is no marine or designated hospital, the collector of customs makes best provisions possible for the treatment of sick mariners, at private or public boarding houses.

The total amount of sick mariners dues collected for the fiscal year 1919-20 was of $78,227.04.

The total number of vessels which paid dues during the year was 3,027, and the number of seamen on these vessels was 71,778.

The following statement shows the number of seamen treated, the number of days of hospital treatment and the expenditure by provinces:—

Province	Number of seamen	Days treatment	Expenditure
			$
Nova Scotia	1,010	11,018	39,634 68
New Brunswick	415	4,264	15,853 11
Prince Edward Island	55	516	1,717 62
Quebec	623	6,797	17,743 15
British Columbia	449	5,189	12,590 50
General Account	.....	.....	1,347 30
	2,552	27,784	88,886 36

(7) VENEREAL DISEASE CONTROL

The sum of $200,000 was granted by the Dominion Government for combatting venereal diseases in co-operation with the provinces.

Of this amount, $10,000 was to be granted to the National Council for Combatting Venereal Diseases, and $10,000 was retained for carrying on the work of this department.

The balance was to be divided among the provinces, in proportion to the population, and it was agreed, by the representatives of the provinces at the meeting of the Dominion Council of Health, held in Ottawa in October, that the provincial grants should be distributed in two half payments; the first to be given on the application of the interested province on its assurance that at least an equal amount of the province's money would be spent on the work; the second to be given six months after the first, and when the Department of Health is satisfied that real substantial work has been done.

The following agreement was entered into by the provinces accepting the grant:—

1. Establishment of clinics with specialist physicians in charge of treatment; with sufficient assistants to carry on the work efficiently and gratis to the patients.
2. Hospital beds for indoor patients; all treatment gratis.
3. Diagnostic laboratories for venereal disease work.
4. Efficient treatment for inmates of jails and places of detention.
5. A specialist in venereal disease diagnosis, treatment and propaganda to carry out the veneral disease work of the provinces.

Grants were made as follows:—

Alberta	$ 5,989 81
Ontario	28,736 84
Nova Scotia	5,286 93
Saskatchewan	7,680 82
Manitoba	6,305 60
New Brunswick	3,758 92
British Columbia	7,314 10
Quebec	23,694 40
National Council for Combating V.D.	5,000 00
Total	$93,767 42

(8) PUBLICITY AND STATISTICS

Library.—Some 2,000 books were transferred from the Commission of Conservation to this department, which were sorted out and placed in order so that they might be referred to as desired. Considerable time was then spent in going over catalogues and referring to other departmental libraries for the purpose of ascertaining what books were available to bring the library up to as satisfactory a completion as possible.

Mailing Lists.—As one of the most important items of the work of this branch would be the dissemination of publicity and statistics gathered together by this branch, considerable time and effort were spent in the getting together of up-to-date mailing lists covering the medical profession, dentists, veterinary surgeons, druggists, both wholesale and retail, women's institutes, in fact all branches of the public that would be interested in the information it was expected would be distributed.

Plans were made and the matter very thoroughly gone into for the starting of a monthly bulletin, which would be distributed throughout Canada, showing the various activities not only of this department, but the provincial and municipal branches of public health.

The Canadian Asociation for the Prevention of Tuberculosis was asisted in the getting out of a reprint of a book covering "Tuberculosis, its Cure and Prevention"; and a large number of these were distributed individually, as well as quantities sent out to the different provinces and other associations in bulk.

The matter of publications, which it would, in all probability, be necessary to issue, was carefully considered, and while no publications were actually gotten out, preliminary details necessary before such issues could be printed were gotten together.

Arrangements were made whereby morbidity and mortality statistics would be obtained regularly from the different provinces, as well as the Dominion Bureau of Statistics, which data it was intended should be distributed in such a way as to permit of comparisons being made between the various sections of the Dominion.

(9) STATEMENT OF APPROPRIATION ACCOUNTS FOR FISCAL YEAR 1919-20.

No. of Vote.	Service.	Appropriation.	Expenditure.	Balance Unexpended
		$ cts.	$ cts.	$ cts.
54	Quarantine, lazarettoes and Public Works Health Act	241,000 00	222,505 78	18,494 22
330	Adulteration of food, etc.	70,000 00	42,001 77	27,998 23
330	Proprietary or patent medicines	3,000 00	2,985 42	14 58
418	Salary of deputy minister	6,000 00	4,290 32	1,709 68
418	*Salaries of staff and contingencies	60,000 00	26,802 54	33,197 46
225 / 498	Marine hospitals	97,500 00	88,886 36	8,613 64
War	Housing (from November 1, 1919)	8,000 00	6,022 29	1,977 71
522	For combatting venereal diseases	200,000 00	93,767 42	106,232 58
		685,500 00	487,261 90	198,238 10

*The officials transferred to the Department of Health, paid from Civil Government Salaries, were paid by the department from which they were transferred to March 31, 1920.

STATEMENT OF REVENUE COLLECTED FROM VARIOUS SOURCES FOR THE FISCAL YEAR ENDED MARCH 31, 1920.

Service.	Total Revenue.	Refunds.	Net Revenue.
	$ cts.	$ cts.	$ cts.
A. Adulteration of food	11,492 57	28 42	11,464 15
B. Feeding stuffs	758 00	.....	758 00
C. Fertilizers	10,389 00	.....	10,389 00
D. Patent medicines	4,302 00	18 00	4,284 00
E. Sick mariners' dues	78,686 01	458 97	78,227 04
Casual Revenue	2,034 80	.....	2,034 80
Total revenue	107,662 38	505 39	107,156 99

"A" Adulteration of Food Revenue for 1919-20.

—	Analysis.	Fines and Forfeitures.	Costs.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia	149 00	585 00	249 20	983 20
New Brunswick	31 00	150 00	56 00	237 00
Prince Edward Island	10 00	50 00	18 00	78 00
Quebec	105 25	3,439 75	605 00	4,150 00
Ontario	2,158 00	1,117 00	497 95	3,772 95
Manitoba	189 00	485 00	198 00	872 00
Saskatchewan	29 00	60 00	24 00	113 00
Alberta		235 00	12 00	247 00
British Columbia	70 00	725 00	241 00	1,036 00
	2,741 25	6,846 75	1,901 15	11,489 15
Less refunds		25 00		25 00
Net total	2,741 25	6,821 75	1,901 15	11,464 15

"B" Feeding Stuffs Revenue for 1919-20.

—	Licenses.	Brands.	Total.
	$ cts.	$ cts.	$ cts.
Nova Scotia	5 00		5 00
Quebec	30 00	4 00	34 00
Ontario	295 00	196 00	491 00
Manitoba	45 00	4 00	49 00
Saskatchewan	10 00	4 00	14 00
Alberta	20 00	4 00	24 00
British Columbia	55 00	14 00	69 00
Foreign	70 00	2 00	72 00
Total	530 00	228 00	758 00

"C" Fertilizers Revenue for 1919-20.

—	Licenses.	Brands.	Total.
	$ cts.	$ cts.	$ cts.
Nova Scotia	1,173 00	86 00	1,259 00
New Brunswick	776 00	16 00	792 00
Quebec	712 00	52 00	764 00
Ontario	2,608 00	174 00	2,782 00
Manitoba	128 00	2 00	130 00
Alberta	144 00		144 00
British Columbia	320 00	18 00	338 00
Foreign	3,936 00	244 00	4,180 00
Total	9,797 00	592 00	10,389 00

"D." Patent Medicines Revenue for 1919-20.

—	Certificates.	Registration Fees.	License Fees.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia	14 00	32 00	16 00	62 00
New Brunswick	9 00	42 00	21 00	72 00
Prince Edward Island		2 00	1 00	3 00
Quebec	88 00	600 00	300 00	988 00
Ontario	182 05	1,202 00	601 00	1,985 05
Manitoba	10 00	32 00	16 00	58 00
Saskatchewan	2 00	4 00	2 00	8 00
Alberta	4 00	36 00	20 00	60 00
British Columbia	14 00	38 00	19 00	71 00
Foreign	46 95	632 00	316 00	994 95
	370 00	2,620 00	1,312 00	4,302 00
Less refunds		12 00	6 00	18 00
Net total	370 00	2,608 00	1,306 00	4,284 00

"E." Sick Mariners' Dues Collections for 1919-20.

Province.	Total Revenue.	Refunds.	Net Revenue.
	$ cts.	$ cts.	$ cts.
Nova Scotia	22,818 32	276 32	22,542 00
New Brunswick	14,395 63		14,395 63
Prince Edward Island	186 13		186 13
Quebec	26,444 94	66 57	26,378 37
British Columbia	14,840 99	116 08	14,724 91
	78,686 01	458 97	78,227 04

(10) CHILD WELFARE

The appointment of Chief of the Division of Child Welfare in the Department of Health was announced by the Civil Service Commission on Saturday, April 10. There is, therefore, not any report of the Division of Child Welfare for the official year ending March 31, 1920.

(11) HOUSING

The administration of the Housing Project under the constitution of the Housing Committee of the Cabinet was transferred by Order in Council P.C. 2204 to the Department of Health as of date November 1, 1919.

The activities of the branch at this date were as follows:—

Preparing standards and recommendations in connection with provincial housing schemes and considering modifications from time to time.

Preparing draft schemes and amendments thereof for Provincial Governments. schemes and considering modifications from time to time.

Preparing draft schemes and amendments thereof for provincial Governments.

Considering and discussing amendments proposed by provincial officials re schemes. Advising regarding details and administration.

Reporting with regard to compliance of schemes with federal requirements after study of schemes.

Conferring with Provincial Governments, municipalities with provincial consent, regarding local application of Government loan and standards.

Preparing model plans and for that purpose studying plans in other countries, and collecting data re materials, standardization, ventilation, sanitation, costs, etc.

Advising regarding planning of sites so as to secure economy in local improvements and housing.

Collecting data regarding existing housing conditions as to shortage, increase of costs and rentals, and methods of reducing costs and rentals.

Preparing comparative information regarding methods of standardization, costs of construction, town planning procedure, etc.

Preparing reports from time to time and dealing with extensive correspondence.

Collecting data and advising regarding schemes of reconstruction of slum areas.

Co-operating with the various departments in removing causes of bad housing conditions and effecting remedies where such conditions already exist, having regard to the importance of housing and its connection with industries and transportation in town planning schemes.

The following is a brief summary of what has been accomplished under the terms of the Federal Loan in the provinces of the Dominion.

PRINCE EDWARD ISLAND

Act passed but no general housing scheme prepared.

According to the Act a soldier, or the widow or the widowed mother of a soldier, may be advanced 90 per cent of the value of the house, land and improvements, where land is owned by the housing commission. Civilians must purchase land from the commission and are advanced 90 per cent of the value of house and improvements.

In general a municipality is required to deposit debentures with provinces as security, and may also be required to assign to the provinces securities obtained from owners of land.

NOVA SCOTIA

Act passed and Federal conditions complied with. Soldier, widow or widowed mother may be advanced 100 per cent of the value of house, land and improvements, where the land has been acquired by a housing commission. Civilians must purchase the land (or advance 10 per cent of the value of house, land and improvements) from commission.

Municipality deposits debentures with provinces without limiting borrowing powers. Several towns have appointed housing commissions and it is expected that there will be at least one hundred houses commenced this spring.

NEW BRUNSWICK

Act passed and Federal conditions complied with. The Act mentions "particularly returned soldiers."

Municipality provides security without limiting borrowing powers. Some fifty houses (all frame without heating) have been built in New Brunswick under the Act.

QUEBEC

Act passed and Federal conditions complied with. Preamble to Act states "particularly for returned soldiers and workmen of town."

Municipality arranges for loan without limiting its borrowing powers.

The Director of Housing in Quebec has laid down the principle that garden suburbs are to be developed in the neighbourhood of chief industrial centres. It is understood that altogether some twenty houses are now completed or in course of erection. There is, however, a large programme for the development of garden suburbs in the near future.

Amendments to the General Housing Scheme passed on the 17th May, 1919, were approved by Order in Council P.C. 1090 on the 19th May, 1920, which provides:—

1. That if the city of Montreal appoints a commission under the provisions of the Quebec Housing Act of 1919, the approval of the Provincial Director of Housing shall not be required for the building scheme of the said city of Montreal.

2. For obtaining the benefit of the amendments of the Federal project set out in the Orders in Council of the Dominion Government, P.C. 1766 of 1919 and P.C. 639 of 1920.

3. The transfer of land from the owner to the municipality and the subsequent reconveyance of land and building, when constructed, to the owner after a certain percentage of the cost has been met by the owner.

ONTARIO

Act passed and federal conditions complied with. A provincial loan has also been provided. Municipalities deposit debentures with province without limiting borrowing powers.

Returned soldiers are granted the same advantages as under the Nova Scotia Act. There have been about 1,200 houses built, due to the activities of the Housing Director, and an efficient technical staff with the aid of local housing commissions.

In addition to the foregoing action the province of Ontario has enacted this session the "Municipal Housing Act, 1920," which is very similar to the Ontario Housing Act of 1919, except that instead of enjoying the federal loan at five per cent, debentures issued by the municipalities and guaranteed by the province, will probably mean money at six per cent to the owner building a house. Also, while the maximum cost of house and land, according to the 1919 Act, is $4,500, according to the "Municipal Housing Act, 1920," this becomes $5,100.

MANITOBA

Act passed and Federal conditions complied with. This is largely an enabling Act. Returned soldiers, as defined in the Civil Service Act, are to receive preference over all other applicants for loan. According to latest reports, the various municipalities bordering the city of Winnipeg are taking advantage of the Act. Over seventy houses have been built and are occupied, while twice that number are in course of erection, and it is expected that about 350 will be built this year. Manitoba intends to make a provincial grant of $1,000,000 in addition to the Federal loan.

SASKATCHEWAN

Act passed applying only to returned members of His Maesty's forces. Otherwise it is similar to the Manitoba Act and is an enabling Act only. No general housing scheme has been prepared to comply with the Federal housing conditions, therefore the Act is inoperative. This is due, it is understood, largely to the inability of the province to recommend an increase in the borrowing powers of the municipalities at the present time.

A housing scheme was submitted by this province on the 14th May, 1920, and has been approved.

ALBERTA

No Act has yet been passed, although it is understood it is being considered.

BRITISH COLUMBIA

Act passed and Federal conditions complied with. This is largely an enabling Act and gives special preference to returned soldiers. The Government may convey free land to soldiers as defined in the Soldiers' Land Act, or to municipalities in connection with better housing for soldiers. The Act as administered up to the present, it is understood, has applied solely to returned soldiers. There are fifty houses built and occupied, ninety houses under construction, and the number of houses expected to be built this year is between two and three hundred.

Respectfully submitted.

J. A. AMYOT,
Deputy Minister.

REPORT OF BY-ELECTIONS

(THIRTEENTH PARLIAMENT)

FOR THE

HOUSE OF COMMONS OF CANADA

HELD DURING THE YEAR 1920

RAPPORT DES ELECTIONS PARTIELLES

(TREIZIÈME PARLEMENT)

POUR LA

CHAMBRE DES COMMUNES DU CANADA

TENUES PENDANT L'ANNÉE 1920

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1921

[No. 13—1921] *Price, 5 cents.*

OFFICE OF THE CHIEF ELECTORAL OFFICER,

OTTAWA, December 31, 1920.

The Honourable the Speaker,
House of Commons,
Ottawa.

SIR,—Pursuant to Section 72, subsection 6 of The Dominion Elections Act, I have the honour to transmit herewith a report of the By-Elections for the House of Commons of Canada held during the year 1920.

I have the honour to be, sir,
Your obedient servant,

O. M. BIGGAR,
Chief Electoral Officer.

BUREAU DU DIRECTEUR GÉNÉRAL DES ÉLECTIONS,

OTTAWA, le 31 décembre 1920.

A l'honorable Orateur de la
Chambre des Communes,
Ottawa.

MONSIEUR,—Conformément au paragraphe (6) de l'article 72 de la *Loi des élections fédérales*, j'ai l'honneur de vous transmettre ci-joint un rapport des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

J'ai l'honneur d'être, monsieur,
Votre obéissant serviteur,

O. M. BIGGAR,
Directeur général des élections.

SESSIONAL PAPER No. 13

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

ELGIN EAST (EST) (Electoral District—District électoral) 1911—Population, 17,597.

Province of Ontario—Province d'Ontario.

Cause of vacancy.—Death of / Cause de la vacance.—Décès de } David Marshall { February 14, 1920. / le 14 février 1920.

Nomination { November 8, 1920. / le 8 novembre 1920.
Election { November 22, 1920. / le 22 novembre 1920.

Returning officer / Officier rapporteur } Henry Huntley, Yarmouth Centre, Ont.

Polling Divisions. — Arrondissements de Scrutin.	No	Candidates. — Candidats: William Granville Charlton.	Sydney Smith McDermand.	John Lawrence Stansell.	Valid votes polled. — Votes valides donnés.	Ballots rejected — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
		Votes.	Votes.	Votes.			
Yarmouth	1	41	196	61	298	5	428
"	2	3	56	59	118	1	130
"	3	66	113	71	250	..	340
"	4	13	158	48	219	1	343
"	5	31	128	44	203	..	240
"	6	132	81	71	284	..	356
"	7	20	96	52	168	..	197
"	8	46	128	106	280	2	331
"	9	66	93	99	258	1	367
"	10	13	55	15	83	..	119
"	11	46	77	26	149	..	207
Port Stanley	A	57	7	108	172	..	513
"	B	64	13	93	170	..	
Aylmer	1A	125	21	83	229	6	604
"	1B	121	16	107	244	..	
"	2A	110	26	114	250	2	610
"	2B	115	17	90	222	2	
"	3	163	17	132	312	3	437
Vienna	1	33	61	42	136	..	186
Springfield	1	65	35	111	211	..	300
South Dorchester	1	20	100	78	198	1	237
"	2	32	130	72	234	..	300
"	3	107	80	47	234	..	284
Malahide	1	42	155	95	292	2	356
"	2	80	192	105	377	..	450
"	3	54	171	92	317	2	409
"	4	75	99	111	285	1	344
"	5	69	109	107	285	..	366
Bayham	1A	38	91	94	223	2	663
"	1B	30	111	77	218	1	
"	2	14	120	41	175	..	248
"	3	12	76	39	127	..	163
"	4	51	48	85	184	..	265
"	5	20	82	122	224	1	297
"	6	8	107	85	200	..	286
"	7	28	31	62	121	..	136
Port Burwell—Advance poll (Bureau provisoire de scrutin)		2	5	6	13	..	..
Totals—Totaux	37	2,012	3,101	2,850	7,963	33	10,512

Majority for / Majorité pour } **Sydney Smith McDermand,** over (sur) { **John Lawrence Stansell, 251.** / **William Granville Charlton, 1,089.**

Report of By-Elections for the House of Commons of Canada held during the year 1920.

Rapport des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

TIMISKAMING
(Electoral District—District électoral). 1911—Population, 37,076.

Province of Ontario—Province d'Ontario.

Cause of vacancy.—Death of the Honourable Francis Cochrane, September 22, 1919.
Cause de la vacance.—Décès de l'honorable Francis Cochrane, le 22 septembre 1919.

Nomination { March 31, 1920. / le 31 mars 1920. }
Election { April 7, 1920. / le 7 avril 1920. }

Returning officer / Officier rapporteur } George Calbick, Haileybury, Ont.

Polling Divisions. — Arrondissements de Scrutin.	No.	Candidates. — Candidats. Angus McDonald.	Ernest Fleetwood Pullen.	Arthur Graeme Slaght.	Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
		Votes.	Votes.	Votes.			
Latchford	1	37	21	6	64	1	84
Coleman, Township	2	6	1	6	13		28
" "	3	115	39	26	180		301
" "	4	101	20	19	140	2	223
" "	5	75	28	4	107	1	175
" "	6	8	18	3	29		41
" "	7	70	26	9	105		148
Cobalt	8	137	6	47	190	1	363
"	9	82	16	53	151	1	385
"	10	29	12	4	45		72
"	11	82	11	25	118		247
"	12	82	60	25	167	1	316
"	13	61	39	40	140		324
"	14	66	57	22	145	1	285
"	15	89	31	27	147		264
"	16	19	32	3	54		138
"	17	73	12	9	94		143
"	18	1	2	1	4		14
Bucke, Township	19	79	6	20	105		191
" "	20	110	23	11	144		230
" "	21	89	18	14	121	2	227
" "	22	21	20	4	45		96
" "	23	19	5	5	29		81
Haileybury	24	20	100	43	163	2	273
"	25	11	98	17	126		234
"	26	38	44	75	157		301
"	27	87	83	91	261	4	474
"	28	81	21	39	141	3	277
"	29	42	25	28	95		219
"	30	61	27	8	96	1	159
New Liskeard	31	53	103	65	221	1	466
"	32	62	63	46	171		351
"	33	41	53	49	143		324
Dymond	34	33	6	11	50		196
"	35	33	17	26	76	1	213
Harris, Township	36	28	25	19	72		213
Casey, "	37	22	11	38	71	1	190
Harley, "	38	71	20	6	97		275
Hilliard, "	39	15	22	16	53		235
Kearns, "	40	63	18	13	94		234
Hudson, "	41	13	20	13	46		158
Evanturel "	42	85	11	9	105		186
Thornloe	43	20	16	11	47		57
Englehart	44	110	145	31	286		426
Dack, Township	45	50	10	5	65		162
Charlton	46	18	80	60	158		218

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REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

TIMISKAMING (Electoral District—District électoral)—*Con.—Suite.*

Polling Divisions. — Arrondissements de Scrutin.	No.	Candidates. — Candidats. Angus McDonald.	Ernest Fleetwood Pullen	Arthur Graeme Slaght.	Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
		Votes.	Votes.	Votes.			
Chamberlain, Township	47	46	6	5	57	1	147
James, "	48	87	63	20	170	3	275
Matheson	49	21	71	51	143	....	188
Whitney, Township	50	41	24	15	80	....	180
Tisdale, "	51	98	43	65	206	.....	370
" "	52	56	35	17	108	.....	195
" "	53	83	35	11	129	.....	201
" "	54	165	38	21	224	.....	275
" "	55	93	48	55	196	1	332
Timmins	56	95	49	84	228	.....	447
"	56A	92	66	92	250	3	474
"	57	81	46	74	201	.....	420
Iroquois Falls	58	62	22	22	106	6	305
"	58A	52	15	15	82	.....	224
"	59	66	17	22	105	.....	269
Cochrane	60	54	88	128	270	1	604
"	61	153	60	132	345	.....	713
Mowat's house, Montreal River	62	3	4	2	9	.....	22
Wm. Welch's house, Montreal River	63	7	6	12	25	1	42
Firstbrook, Township	64	9	5	17	31	.....	72
Ragged Chutes	65	6	12	2	20	.....	23
Cane, Township	66	21	14	6	41	.....	111
Lorrain, "	67	10	7	1	18	.....	84
Keeley Mine Office	68	35	2	4	41	.....	39
Henwood and Lundy, Townships	69	30	10	3	43	.....	160
Harry Hill's house, Hill's Lake	70	27	7	1	35	.....	117
Marter, Township	71	24	3	2	29	1	84
Krugerdorf, Bedford's house	72	18	7	1	26	.....	97
R. Peever's house, Tomstown	73	39	16	5	60	.....	117
Brethour, Schoolhouse (No. 2)	74	3	9	4	16	.....	110
Zeta, P.O	75	28	8	3	39	.....	115
Earlton, P.O	76	59	31	44	134	.....	380
Hough Lake	77	34	3	2	39	.....	137
Dane, P.O	78	5	9	6	20	.....	27
Larder Lake	79	7	19	4	30	.....	196
Goodfish Lake	80	1	2	0	3	.....	14
Bourkes	81	13	3	14	30	.....	76
W. J. Simser's house, Sesekinika	82	5	3	1	9	.....	13
Milton's store, Boston Creek	83	44	11	13	68	.....	143
Schoolhouse, Ramore	84	18	10	62	90	.....	149
Kirkland, Lake	85	110	30	27	167	.....	298
Swastika	86	28	45	18	91	.....	179
Wigwan, P.O	87	9	4	1	14	.....	26
H. Brolim's house, Wabun	88	5	0	0	5	.....	20
Leevile, P.O	89	11	0	3	14	.....	37
Council Chamber, Elk Lake	90	10	2	1	13	.....	65
Gowganda	91	128	15	21	164	.....	347
P. Bartlett's house, Munroe Road	92	0	2	0	2	.....	2
Wahtaybeg	93	2	19	3	24	.....	76
Shield's house, Porquois Junction	94	48	47	33	128	2	346
Goldlands	95	15	4	4	23	.....	44
Monteith, Town hall	96	39	30	9	78	.....	150
Moses Hewit's house, Homer	97	12	8	65	85	.....	202
Chas. Anthony's house, Anthony, P.O	98	5	6	2	13	.....	48
Shillington Schoolhouse	99	13	15	6	34	.....	89
Schoolhouse Matheson	100	38	28	47	113	1	382
Clifton Mines, Deloro Tp	101	14	1	4	19	.....	29

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

TIMISKAMING (Electoral District—District électoral)—*Con.—Fin.*

Polling Divisions. Arrondissements de Scrutin.		Candidates. — Candidats.			Valid votes polled. — Votes valides donnés.	Ballots rejected — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
	No.	Angus McDonald. Votes.	Ernest Fleetwood Pullen. Votes.	Arthur Graeme Slaght. Votes.			
Power's Hotel, Mattagami Heights	102	96	16	116	228	2	528
Connaught	103	26	22	93	141		375
Canadian Pulp Co's. Office, Potter, P.O.	104	1	8	8	17		25
Brower	105	20	23	14	57		130
Abitibi Camp, Couchiching Falls	106	0	3	0	3		15
Nellie Lake	107	25	11	6	42		84
Clute, P.O.	108	31	15	71	117		230
Lovell's Store, Hunter	109	3	22	24	49	1	190
Nahma	110	3	6	14	23		79
Abitibi Power Co's. Office, Low Bush	111	7	8	24	39		134
Schoolhouse, Jacksonboro	112	62	56	51	169	2	233
Seymour's house, Driftwood	113	15	1	27	43	1	86
Moonbeam	114	42	3	195	240		475
Kapuskasing	115	47	56	8	111		343
Hearst	116	58	42	55	155	4	452
Totals—Totaux	118	5,222	2,996	3,090	11,308	53	23,883

Majority for / Majorité pour **Angus McDonald,** over (sur) **Arthur Graeme Slaght, 2,132. / Ernest Fleetwood Pullen, 2,226.**

KAMOURASKA (Electoral District—District électoral). 1911—Population, 20,888.

Province of Quebec—Province de Québec.

Cause of vacancy:— / Cause de la vacance:— Ernest Lapointe (who resigned his seat, October 14, 1919. / qui a remis son mandat le 14 octobre 1919.

Nomination (March 31, 1920. / le 31 mars 1920. Returning officer / Officier rapporteur Louis Joseph Bérubé, Ste. Anne de la Pocatière, Qué.

Adolphe Stein.—Acclamation.

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REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

ST. JAMES (ST-JACQUES) (Electoral District—District électoral). 1911—Population, 44,057.

Province of Quebec—Province de Québec.

Cause of vacancy.—Death of / Cause de la vacance.—Décès de } Louis Audet Lapointe {February 7, 1920. / le 7 février 1920.

Nomination {March 31, 1920. / le 31 mars 1920.
Election {April 7, 1920. / le 7 avril 1920.

Returning officer / Officier rapporteur } Arthur Lalonde, Montreal, Que.

Polling Divisions. — Arrondissements de Scrutin.		Candidates. — Candidats.		Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
	No.	Fernaud Rinfret. Votes.	Alphetus Mathieu. Votes.			
St. James Ward—(Quartier St-Jacques)—						
52 Montcalm	1	15	2	17		35
109 Beaudry	2	35	7	42		76
120 Beaudry	3	57	33	90		143
599 Craig E.	4	18	11	29	1	56
67 St-Timothée	5	27	18	45		83
63 St-André	6	17	14	31	1	82
412 Lagauchetière E.	7	82	18	100	6	153
320 Lagauchetière E.	8	46	29	75		106
316 Dorchester E.	9	77	23	100	3	173
534 Dorchester E.	10	37	36	73	1	138
128 Amherst	11	46	40	86	2	173
671 Lagauchetière E.	12	86	39	125		208
264 Visitation	13	75	23	98		172
217 Montcalm	14	53	28	81		153
240 Montcalm	15	50	20	70		147
195 Amherst	16	35	23	58		110
243 St-Timothée	17	28	21	49		101
205 St-André	18	58	19	77	1	121
236 St-André	19	45	22	67	4	118
365A Dorchester E.	20	21	14	35	1	165
369 Dorchester E.	21	55	26	81		120
32 Labelle	22	30	30	60		134
139 St-Denis	23	73	37	110		195
444 Demontigny E.	24	35	15	50		77
530 Demontigny E.	25	43	26	69	2	112
582 Demontigny E.	26	51	22	73		116
622 Demontigny E.	27	60	46	106	1	182
Lafontaine Ward—Quartier Lafontaine)—						
285A St-Denis	28	58	12	70		125
402 St-Hubert	29	71	25	96		164
414 St-Christophe	30	65	40	105		155
414 Ontario E.	31	40	24	64		111
441 St-Christophe	32	68	42	110	1	157
521 St-Christophe	33	28	25	53	4	96
454 St-Timothée	34	34	24	58		154
495 Demontigny E.	35	41	17	58		155
531 Demontigny E.	36	21	16	37		62
520 Ontario E.	37	28	16	44		105
345 Amherst	38	26	33	59		126
503 Amherst	39	32	28	60		124
407 Wolfe	40	26	33	59		134
579 Wolfe	41	31	31	62	1	142
373 Montcalm	42	39	30	69		124
532 Beaudry	43	28	34	62		139
397 Beaudry	44	19	19	38		77
436 Visitation	45	43	13	56		90

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

ST. JAMES (ST-JACQUES) (Electoral District—District électoral)—*Con.*—*Fin.*

Polling Divisions. — Arrondissements de Scrutin.		Candidates. — Candidats.		Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
		Fernand Rinfret.	Alphetus Mathieu.			
Lafontaine Ward—*Con.*—(Quartier Lafontaine) —*Fin.*	No.	Votes.	Votes.			
9 Robin	46	32	29	61	.....	123
576 Visitation	47	18	21	39	....	97
696 Visitation	48	39	32	71	.....	147
595 Montcalm	49	16	24	40	.....	119
598 Montcalm	50	14	13	27	.....	53
677 Wolfe	51	21	15	36	.....	83
625 Amherst	52	17	21	38	.....	97
566 Amherst	53	39	17	56	.....	102
495 Ontario E	54	47	33	80	1	159
447 Ontario E	55	41	21	62	.....	123
413 Ontario E	56	36	23	59	.....	91
353 Ontario E	57	76	19	95	.....	160
341 Ontario E	58	61	34	95	3	177
212 Cherrier	59	51	21	72	.....	130
437 Berri	60	40	19	59	2	98
106 Cherrier	61	36	23	59	.....	94
527 Sherbrooke E	62	45	10	55	.....	65
100 Parc Lafontaine	63	73	39	112	.....	184
677 St-André	64	81	26	107	1	153
862 St-Christophe	65	69	34	103	.....	172
523 Berri	66	63	24	87	.....	165
2 Rivard	67	31	13	44	.....	82
64 Rivard	68	15	9	24	.....	62
730 Berri	69	18	12	30	.....	69
5 Rivard	70	12	6	18	.....	55
757 Berri	71	94	37	131	.....	204
963 St-Hubert	72	68	14	82	.....	122
792 St-André	73	11	14	25	1	99
92 Mentana	74	20	16	36	.....	74
91 Mentana	75	60	31	91	.....	163
288 Parc Lafontaine	76	67	44	111	.....	192
East Ward—(Quartier Est)—						
68 Notre-Dame E	77	34	3	37	.....	60
208 Notre-Dame E	78	58	34	92	3	161
92 Berri	79	57	21	78	.....	168
Totals—Totaux	79	3,413	1,856	5,269	40	9,792

Majority for / Majorité pour Fernand Rinfret, 1,557.

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REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

COLCHESTER (Electoral District—District électoral). 1911—Population, 23,664.

Province of Nova Scotia—Province de la Nouvelle-Ecosse.

Cause of vacancy.—Honourable Fleming Blanchard McCurdy, appointed Minister of Public Works, July 13, 1920.

Cause de la vacance.—L'Honorable Fleming Blanchard McCurdy, nommé Ministre des Travaux Publics, le 13 juillet 1920.

Nomination { September 6, 1920. / le 6 septembre 1920. } Returning officer / Officier rapporteur } W. B. Armstrong, Bible Hill, N.S.

Election { September 20, 1920. / le 20 septembre 1920. }

Polling Divisions. — Arrondissements de Scrutin.			Candidates. — Candidats.		Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
		No.	Hugh Archibald Dickson.	Honourable Fleming Blanchard McCurdy.			
			Votes.	Votes.			
Truro, Town (Ville)	1A	A–L	39	141	180	3	513
" "	1A	M–Z	19	159	178	.....	
" "	B	A–Z	48	171	219	.....	333
" "	C	A–L	20	105	125	.....	400
" "	C	M–Z	26	99	125	.....	
" "	D	A–L	28	94	122	1	422
" "	D	M–Z	27	101	128	1	
" "	E	A–L	35	138	173	.....	552
" "	E	M–Z	57	118	175	1	
" "	F	A–Z	29	144	173	.....	247
" "	G	A–L	26	92	118	.....	399
" "	G	M–Z	27	93	120	.....	
" "	H	A–L	34	96	130	3	433
" "	H	M–Z	45	105	150	.....	
" "	I	A–L	45	131	176	.....	528
" "	I	M–Z	48	117	165	1	
" "	J	A–L	41	95	136	1	475
" "	J	M–Z	28	126	154	3	
" "	K	A–L	41	131	172	.....	522
" "	K	M–Z	20	121	141	.....	
" "	L	A–Z	33	88	121	.....	180
" "	M	A–L	43	109	152	.....	427
" "	M	M–Z	29	109	138	4	
" "	N	A–Z	39	167	206	4	322
" "	Advance Poll—Bureau provisoire de scrutin		4	91	95	.....	.....
Clifton	2A		82	83	165	.....	226
"	2B		84	113	197	.....	245
Brookfield	3A		74	118	192	.....	255
"	3B		94	88	182	.....	236
Lower Stewiacke	4		177	62	239	2	278
Middle Stewiacke	5		94	109	203	1	256
Upper Stewiacke, West	6		96	103	199	.....	244
Salmon River	7A		111	119	230	.....	289
"	7B		54	75	129	1	143
"	7C		88	137	225	2	248
"	7D		92	47	139	.....	159
Kemptown	8		41	62	103	.....	123
Earltown	9B		106	72	178	.....	219
"	9B		90	48	138	2	161
Waugh's River	10		182	59	241	.....	295
Tatamagouche, East	11A		123	110	233	2	278
"	11B		44	18	62	.....	73
New Annan	12A		143	33	176	.....	208
"	12B		93	64	157	.....	178

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

COLCHESTER (Electoral District—District électoral)—*Con.—Fin.*

Polling Divisions. — Arrondissements de Scrutin.		Candidates. — Candidats. Hugh Archibald Dickson.	Candidates. — Candidats. Honourable Fleming Blanchard McCurdy.	Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
	No.	Votes.	Votes.			
North River	13A	113	89	202	....	245
"	13B	103	125	228	....	285
Lower Onslow	14A	113	31	144	....	172
"	14B	174	74	248	....	292
Upper Londonderry	15A	101	144	245	....	305
"	15B	98	84	182	....	219
Middle Londonderry	16A	87	68	155	....	194
"	16B	133	121	254	....	320
Lower Londonderry	17A	84	75	159	....	194
"	17B	171	140	311	1	384
Economy	18A	58	31	89	....	106
"	18B	138	100	238	2	319
Five Islands	19	109	120	229	3	307
Upper Stewiacke, East	20	130	108	238	....	309
Acadia Mines	21A	90	81	171	....	211
"	21B	100	97	197	....	273
Tatamagouche, West	22	130	103	233	2	278
Gay's River	23	108	118	226	....	310
Brule	24	173	111	284	....	322
Stewiacke, Town (Ville)	A-L 25	83	84	167	....	436
" "	M-Z 25	39	113	152	2	
Totals—Totaux	65	5,034	6,478	11,512	44	15,348

Majority for / Majorité pour Honourable Fleming Blanchard McCurdy, 1,444.

SESSIONAL PAPER No. 13

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

ST. JOHN CITY AND COUNTIES OF ST. JOHN AND ALBERT

(Electoral District—District électoral). 1911—Population, 63,263.

Province of New Brunswick—Province du Nouveau-Brunswick.

Cause of vacancy.—Honourable Rupert Wilson Wigmore, appointed Minister of Customs, July 13, 1920.
Cause de la vacance.—L'Honorable Rupert Wilson Wigmore nommé Ministre des Douanes, le 13 juillet 1920.

Nomination { September 6, 1920. / le 6 septembre 1920. }
Election { September 20, 1920. / le 20 septembre 1920. }

Returning officer / Officier rapporteur } Amon A. Wilson, St. John, N.B.

Polling Divisions. — Arrondissements de Scrutin.		Candidates. — Candidats.		Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
	No.	Alban Frederick Emery.	Honourable Rupert Wilson Wigmore.			
		Votes.	Votes.			
St. John, City—St-Jean (Cité)—						
Kings Ward (Quartier)	1	47	56	103	4	329
" "	2	23	78	101	. . . .	321
" "	3	47	68	115	. . . .	337
" "	4	10	91	101	8	320
Wellington Ward (Quartier)	5	36	50	86	1	269
" " "	5A	51	71	122	5	336
" " "	6	41	52	93	. . . .	397
" "	7	36	64	100	1	278
" "	8	26	35	61	. . . .	244
" "	9	57	34	91	2	279
" "	10	21	35	56	4	179
" "	11	35	81	116	. . . .	303
" "	12	17	59	76	3	221
Prince Ward (Quartier)	13	28	47	75	. . . .	292
" "	14	52	39	91	1	375
" "	15	48	49	97	5	343
" "	16	24	51	75	11	252
" "	17	56	49	105	1	301
" "	18	44	41	85	2	344
" "	19	30	71	101	. . . .	341
" "	20	26	36	62	3	248
Queen's Ward (Quartier)	21	16	48	64	3	248
" "	22	20	76	96	. . . .	317
" "	23	8	48	56	. . . .	211
" "	24	14	94	108	. . . .	380
" "	25	18	73	91	4	303
" "	26	18	36	54	. . . .	173
" "	27	13	89	102	. . . .	313
" "	28	14	78	92	5	296
Duke's Ward (Quartier)	29	32	104	136	2	375
" "	30	24	72	96	. . . .	299
" "	31	24	73	97	1	288
" "	32	29	60	89	1	321
" "	33	13	62	75	8	258
" "	34	14	72	86	. . . .	264
Sydney Ward (Quartier)	35	26	96	122	9	342
" "	36	44	88	132	4	358
" "	37	27	54	81	2	291
" "	38	23	84	107	8	282
Guy's Ward (Quartier)	39	20	77	97	4	245
" "	40	19	95	114	2	311
" "	41	18	69	87	. . . .	292
" "	42	15	75	90	3	331
" "	43	12	37	49	. . . .	187
" "	44	17	91	108	2	309

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920

ST. JOHN CITY AND COUNTIES OF ST. JOHN AND ALBERT—*Con.*—*Fin.*
(Electoral District—District électoral).

Polling Divisions. — Arrondissements de Scrutin.	No.	Candidates. — Candidats. Alban Frederick Emery.	Honourable Rupert Wilson Wigmore.	Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
ST. JOHN CITY—*Con.*—ST-JEAN, CITÉ—*Fin.*)		Votes.	Votes.			
Brook's Ward (Quartier)	45	18	71	89	4	323
" "	46	30	54	84	. . .	301
" "	47	26	41	67	. . .	261
" "	48	21	60	81	3	315
Lorne Ward (Quartier)	49	30	64	94	2	317
" "	50	24	89	113	1	366
" "	51	16	61	77	2	253
" "	52	25	59	84	. . .	283
" "	53	27	68	95	2	299
" "	54	45	63	108	. .	324
" "	55	23	83	106	2	382
" "	56	11	71	82	. . .	279
Lansdowne Ward (Quartier)	57	27	81	108	. .	299
" "	58	55	70	125	. .	372
" "	59	41	53	94	. . .	343
" "	60	48	51	99	1	310
" "	61	25	72	97	. . .	319
" "	62	26	67	93	. . .	301
" "	63	19	77	96	1	300
Dufferin Ward (Quartier)	64	13	68	81	2	320
" "	65	20	46	66	. .	334
" "	66	30	54	84	1	291
" "	67	36	58	94	. . .	338
" " "	68	34	53	87	. . .	327
" "	69	23	39	62	. . .	258
" "	70	12	39	51	3	222
Victoria Ward (Quartier)	71	21	90	111	6	311
" "	72	23	84	107	6	338
" "	73	14	64	78	. . .	264
" "	74	22	112	134	. . .	397
" "	75	17	92	109	5	364
" "	76	8	74	82	. . .	207
Stanley Ward (Quartier)	77	7	63	70	. . .	225
" "	78	14	55	69	. . .	218
ST. JOHN COUNTY (COMTÉ DE ST-JEAN) RURAL.						
St. Martins, Parish (Paroisse)	79	50	58	108	. . .	261
" "	80	37	54	91	. . .	300
" "	81	42	51	93	1	282
Simonds, Parish (Paroisse)	82	13	58	71	1	301
" "	83	14	57	71	. . .	364
" "	84	21	36	57	. . .	285
" "	85	15	25	40	. . .	244
" "	86	28	40	68	. . .	157
" "	87	14	48	62	1	99
" "	88	5	42	47	. . .	175
Lancaster, Parish (Paroisse)	89	44	55	99	1	236
" "	90	41	71	112	. . .	254
" "	91	52	52	104	. . .	241
" "	92	44	78	122	. . .	295
" "	93	23	35	58	. . .	172
" "	94	27	95	122	. . .	286
" "	95	9	58	67	1	235

SESSIONAL PAPER No. 13

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

ST. JOHN CITY AND COUNTIES OF ST. JOHN AND ALBERT—*Con.—Fin.*
(Electoral District—District électoral).

Polling Division. — Arrondissements de Scrutin.	Candidates. — Candidats.		Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
	Alban Frederick Emery.	Honourable Rupert Wilson Wigmore.			
No.	Votes.	Votes.			
Lancaster, Parish (Paroisse) 96	27	124	151		312
" " 97	40	118	158	1	321
" " 98	30	112	142	2	289
" " 99	62	44	106	2	307
" " 100	44	32	76		255
Musquash, Parish (Paroisse) 101	39	38	77		110
" " 102	16	97	43		54
" " 103	7	51	58		110
ALBERT COUNTY (COMTÉ) RURAL.					
Hopewell, Parish (Paroisse) 104	44	120	164		301
" " 105	89	71	160		276
" " 106	99	88	187		259
Harvey, Parish (Paroisse) 107	64	107	171		302
" " 108	64	44	108		234
Hillsboro, Parish (Paroisse) 109	33	64	97	1	146
" " 110	52	77	129	1	225
" " 111	49	91	140		297
" " 112	55	117	172	4	365
" " 113	41	56	97	2	201
Coverdale, Parish (Paroisse) 114	99	81	180	3	306
" " 115	30	138	168		225
" " 116	41	96	137		234
Elgin, Parish (Paroisse) 117	86	69	155		265
" " 118	84	79	163	1	292
" " 119	99	53	152		252
Alma, Parish (Paroisse) 120	58	84	142		211
" " 121	74	68	142		225
St. John City (St-Jean cité)—Advance Poll (Bureau provisoire de scrutin) 122	0	5	5	.....	.....
Fairville, Advance Poll (Bureau provisoire de scrutin) 123	1	4	5	.....	.....
Totals—Totaux 124	3,970	8,125	12,095	172	34,225

Majority for / Majorité pour } Honourable Rupert Wilson Wigmore, 4,155

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

YALE (Electoral District—District électoral). 1911—Population,28,066.

Province of British Columbia—Province de la Colombie-Britannique.

Cause of vacancy.—Honourable Martin Burrell, appointed joint Librarian of Parliament, July 8, 1920.
Cause de la vacance.—L'Honorable Martin Burrell, nommé Bibliothécaire conjoint du Parlement, le 8 juillet 1920.

Nomination { November 8, 1920. / le 8 novembre 1920.
Election { November 22, 1920. / le 22 novembre 1920.

Returning officer / Officier rapporteur } R. G. Hardisty, Peachland, B.C.

Polling Divisions. — Arrondissements de Scrutin.	No.	Candidates. — Candidats. Charles Edgar Edgett.	Candidates. — Candidats. John Armstrong MacKelvie.	Valid votes polled. — Votes valides donnés.	Ballots rejected. — Bulletins écartés.	Voters on list. — Electeurs sur la liste
		Votes.	Votes.			
Armstrong	1	62	34	96		133
"	2	54	41	95		147
"	3	54	47	101		135
Vernon	4	66	108	174		254
"	5	67	121	188		281
"	6	44	101	145	2	208
"	7	100	132	232	1	307
"	8	80	102	182		269
"	9	71	114	185	1	273
"	10	125	170	295		438
Kelowna	11	103	115	218	4	349
"	12	71	83	154		238
"	13	126	137	263		400
"	14	104	79	183	2	278
"	15	98	94	192	2	305
Grand Forks	16	53	73	126	3	185
"	17	55	59	114		163
"	18	55	67	122		166
" Rural	19	90	76	166		258
Armstrong, Rural	20	100	51	151	1	535
" "	20a	74	75	149		
Vernon, Rural	21	17	50	67		
Kelowna, Rural	22	7	2	9		
Mara	26	64	13	77		97
Grindrod	27	43	17	60		91
Enderby	28	276	81	357	2	493
Deep Creek	29	34	6	40		66
Silver Creek	30	58	3	61		83
Ashton Creek	31	23	7	30		36
Falkland	32	17	11	28		28
Glenemma	33	27	9	36		72
Hullcar	34	53	15	68		92
Okanagan	35	6	32	38	2	70
Hupel	36	21	0	21		32
Trinity Valley	37	7	6	13		11
Mabel Lake	38	7	19	26		43
Kedleston	39	0	12	12	1	27
Hilton	40	11	1	12		43
Cherryville	41	16	6	22		36
Lumby	42	69	65	134		189
Lavington	43	30	20	50		93
Coldstream	44	30	85	115		166
Commonage	45	8	11	19		32
Okanagan Landing	46	18	25	43		97
Oyama	47	38	95	133		163
Ewing's Landing	48	4	11	15		32

SESSIONAL PAPER No. 13

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

YALE (Electoral District—District électoral)—*Con.—Suite.*

Polling Divisions. — Arrondissements de Scrutin.	No	Candidates. — Candidats. Charles Edgar Edgett.	John Armstrong MacKelvie.	Valid votes polled. — Votes valides donnés.	Ballots rejected — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
		Votes.	Votes.			
Killiney	49	1	10	11	1	15
Short's Point	50	0	10	10		27
Benvoulin	51	25	36	61		98
East Kelowna	52	28	77	105		157
Ellison	53	30	67	97		122
Glenmore	54	29	53	82		91
Mineola	55	18	26	44		53
Naramta	56	35	75	110		168
Okanagan Centre	57	4	39	43		76
Peachland	58	28	148	176	1	254
Reid's Landing	59	4	7	11		11
Rutland	60	52	96	148		237
Westbank	61	39	47	86		108
Wood's Lake	62	36	51	87		122
South Kelowna	63	12	56	68		112
Summerland	64	129	151	280		373
West Summerland	65A	82	86	168		504
"	65	85	74	159		
Allenby	66	23	23	46		108
Allen Grove	67	21	10	31		46
Coalmont	68	12	2	14		57
Copper Mountain	69	9	9	18		41
Hedley	70	30	55	85		137
Irrigation Camp	71	62	45	107	3	333
Kaleden	72	8	26	34		57
Keremeos	73	56	160	216		309
Nickle Plate	74	Cancelled Poll—Bureau de scrutin cancellé.				
Okanagan Falls	75	14	60	74		85
Osoyoos	76	6	15	21	1	40
Penticton	77	73	82	155		238
"	78	94	95	189		307
"	79	77	83	160	1	280
"	80	100	102	202	1	338
Princeton	81	83	65	148		236
"	82	75	69	144		241
Tulameen	83	17	9	26		37
Beaverdell	84	13	7	20		41
Boundary Falls	85	22	4	26		40
Bridesville	86	48	11	59		65
Carmi	87	13	5	18		22
Christian Valley School	88	3	1	4		6
Denoro	89A	4	5	9		14
Eholt	89	0	4	13		28
Greenwood	90	95	90	185		300
Midway Mother Lode	91	42	28	70		128
Riverside	92	25	38	63		105
Rock Creek	93	19	32	51		70
Sidley	94	24	4	28	1	48
Westbridge	95	5	4	9		24
Brown Creek—Gloucester	96	26	7	33		45
Cascade	97	42	11	53		97
Fife	98	16	3	19		39
Penticton	99	101	90	191		339
"	100	80	68	148		231
Cawston	101	48	53	101		139
Blue Springs	102	1	18	19		25

REPORT of By-Elections for the House of Commons of Canada held during the year 1920.

RAPPORT des élections partielles pour la Chambre des Communes du Canada tenues pendant l'année 1920.

YALE (Electoral District—District électoral)—*Con.—Fin.*

Polling Divisions. Arrondissements de Scrutin.	Candidates. — Candidats. Charles Edgar Edgett.	Candidates. — Candidats. John Armstrong MacKelvie.	Valid votes polled. — Votes valides donnés.	Ballots rejected — Bulletins écartés.	Voters on list. — Electeurs sur la liste.
Grandview 103	25	1	26	....	35
Vernon, Advance Poll (Bureau provisoire de scrutin) 1	0	0	0	.. ..	.. ..
Penticton, Advance Poll (Bureau provisoire de scrutin) 2	6	5	11	..	.. ..
Grand Forks, Advance Poll (Bureau provisoire de scrutin) 3	0	0	0		.. ..
Totals—Totaux 107	4,600	4,989	9,589	30	14,664

Majority for / Majorité pour **John Armstrong MacKelvie, 389**

REPORT OF THE WORK

OF THE

DEPARTMENT OF

SOLDIERS' CIVIL RE-ESTABLISHMENT

CANADA

DECEMBER, 1920

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1921

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., Governor General and Commander in Chief of the Dominion of Canada.

May it Please Your Excellency,—

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Soldiers' Civil Re-Establishment for the calendar year ended December 31, 1920.

I have the honour to be,

Your Excellency's most obedient servant,

JAMES A. LOUGHEED,
Acting Minister of Soldiers' Civil Re-Establishment.

February 1, 1921.

[No. 1921.]

THE DEPARTMENT OF SOLDIERS' CIVIL RE-ESTABLISHMENT

Head Office— 22 Vittoria St., Ottawa.

MINISTER—Senator the Honourable Sir James A. Lougheed, P.C., K.C.M.G.
DEPUTY MINISTER—N. F. Parkinson.
ASSISTANT DEPUTY MINISTER AND SECRETARY—E. H. Scammell.
DIRECTOR OF ADMINISTRATION—E. Flexman, D.S.O.
DIRECTOR OF MEDICAL SERVICES—Dr. W. C. Arnold.
DIRECTOR OF VOCATIONAL TRAINING—E. Flexman, D.S.O.
DIRECTOR, ORTHOPAEDIC AND SURGICAL APPLIANCES BRANCH—R. W. Coulthard.
DIRECTOR, DENTAL SERVICES—Dr. R. B. O'Sullivan, O.B.E.
SUPERVISOR OF EXPENDITURES—J. F. Waddington.
GENERAL SUPERINTENDENT OF ENGINEERING BRANCH—W. Herbert George.
OVERSEAS REPRESENTATIVE—C. G. Arthur, D.S.O.

District Offices—

"A" Unit, Province of Quebec—
Head Office, Drummond Building, Montreal, P.Q.
Branch Office, Merger Building, Quebec (Medical Clinic only).

"B" Unit, Nova Scotia and Prince Edward Island—
Head Office, Nurses' Home, Camp Hill Hospital, Halifax.
Vocational Office, Bellevue Bldg., Halifax.

"C" Unit, Eastern Ontario—
Head Office, Plaza Building, Ottawa.
Vocational Office, 8 Cliff St., Ottawa.
Branch Office, Golden Lion Block, Kingston.

"D" Unit, Central Ontario—
Head Office, 185 Spadina Ave., Toronto.
Vocational Office, Allen Building, 105 Simcoe St., Toronto.
Branch Vocational Office, Barrie Building, Peterborough.
Branch Office, Hamilton Hut Hospital, Hamilton.

"F" Unit, Western Ontario—
Head Office, Royal Bank Building, London.
Vocational Office, Carling Block, Richmond St., London.
Vocational Office, Old Herald Building, Guelph.

"G" Unit, Manitoba—
Head Office, Notre Dame Investment Bldg., Winnipeg.
Branch Vocational Office, Post Office Bldg., Brandon.

"H" Unit, Saskatchewan—
Head Office, Veteran Block, Regina.

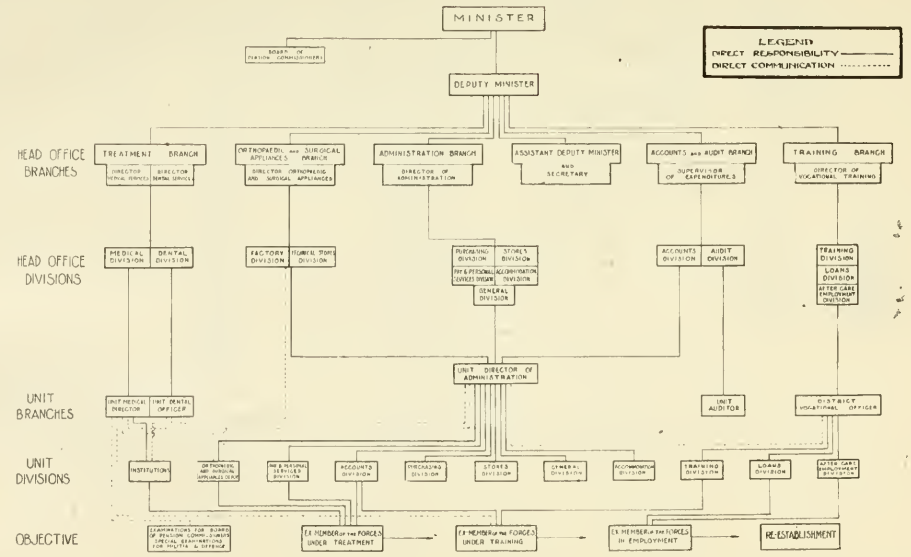
"I" Unit, Alberta—
Head Office, Lancaster Bldg., Calgary, Alta.
Branch Office, McLeod Block, Edmonton, Alta.

"J" Unit, British Columbia—
Head Office, Board of Trade Bldg., Vancouver.
Branch Vocational Office, Central Bldg., Victoria.

"K" Unit, New Brunswick—
Head Office, Fredericton Hospital, Fredericton.

Overseas Office—103 Oxford St., London W. England.

DEPARTMENT OF SOLDIERS' CIVIL RE-ESTABLISHMENT
CHART SHOWING ORGANIZATION



DECEMBER 1ST 1922.

CHART O-6

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Introductory Letter

TO REPORT OF THE

Department of Soldiers' Civil Re-establishment

Senator, the Honourable Sir James A. Lougheed, P.C., K.C.M.G.
Minister of Soldiers' Civil Re-establishment,
Ottawa.

Sir,—In accordance with your instructions I have the honour to submit a report on the work of the Department of Soldiers' Civil Re-establishment, covering the calendar year, 1920. The activities of the department are so multifarious that it is only possible to give a very brief outline of the work accomplished. Several features, however, stand out and deserve special mention in a general way, apart from the more detailed references to be found in the sectional reports covering the various branches of the department's work, which follow.

2. The "peak load" of re-establishment responsibilities has been reached and passed, indeed more than one branch of the department's work has been practically completely demobilized.

3. Special employment facilities for ex-soldiers, as provided by this department, in conjunction with the Department of Labour and the federal-provincial employment offices, were withdrawn as from June 1, 1920, and the Information and Service Branch, which had developed an organization that to no mean degree accounted for the remarkable facility with which the ex-soldier was placed in employment after his discharge from the army, was disbanded. The number of men for whom employment was found was 109,493. In many instances more than one situation had to be obtained. the total number of situations being 175,157, or 159·9 per cent when compared with the total number of men placed. In addition, 1,218,472 inquiries on various subjects were dealt with by this branch, which also issued all certificates in connection with the Federal Emergency Appropriation.

4. The Vocational Branch which to the date of this report, December 31, 1920, had accepted 50,521 men for training, including 11,574 minors, has long passed the period of maximum numbers. In February, 1920, there were 26,022 men in its classes or otherwise on its strength for training. This number has now decreased to 4,714.

5. The Treatment Branch has not shown an appreciable decrease in its work. In February, 1920, there were 9,755 patients on the strength for treatment, while in addition clinical treatments were being provided for 13,891 per week. On December 31, 1920, the number of patients being dealt with was:—

On strength	6,431
Clinical treatments per week	7,078

When it is realized that of the patients on strength of the department for treatment nearly one-half are suffering with disabilities which will require treatment for the duration of their lives, including tuberculous, insane, and otherwise incurable, it

will be seen that the treatment work of the department cannot be expected materially to decrease during the next few years. The remaining 3,000 is made up of pensioners and others requiring treatment for recurring service disabilities and represent only 4 per cent of the 70,000 pensioners in Canada.

6. The branch sectional reports will be seen to outline a period of reorganization during the year. This particularly applies to the "Service" branches of the department. The reorganization referred to in each case has been carried out on a definite plan to meet the changed conditions present in the department to-day as compared with the period of rapid growth during which time, equally rapid expansion was necessary.

7. The early requirements of the department necessitated an organization capable of meeting any sudden emergency. This was obtained only by the provision of a large number of specially qualified executives, each responsible for a particular portion of the work with which they were familiar through training and experience. In this way multiple driving power was obtained, the combined efforts of the administrators being guided as to policy and used to build up the complete organization. With a change in the nature of the requirements, however, came the possibility of reducing executives and centralizing the administration as is indicated in the chart showing the present organization of the department.

8. The branches retained are only five in number, being made up of three technical—

Treatment,
Training,
Orthopædic,

and two services,

Administrative,
Accounting and Audit.

9. In the very near future with further reduction in training strength realized, it will be possible to place the control of vocational matters in the hands of one of the other branches, thus further reducing the number of executives.

10. The Orthopædic and Surgical Appliances Branch has now overtaken all the back work and in a majority of cases has supplied a spare artificial limb in addition to the original. The quality and comfort of the appliances supplied have fully demonstrated the wisdom of the policy outlined in 1916 under which the department has carried on its own manufacturing.

11. The Soldiers' Comfort Branch, with headquarters at Toronto, has done an excellent work and special mention should be made of the activities of the Honorary Superintendent, Mrs. Arthur Van Koughnet, to whom thanks are due as well as to the ladies who have so ably assisted her.

12. The number of former members of the Canadian Expeditionary Force and of the Imperial Forces resident in the United States has shown a marked increase. The agreement entered into in October, 1919, with the Bureau of War Risk Insurance, Washington, has proved most beneficial. Under this agreement and regulations which have been issued by the Bureau and the United States Public Health Service, all facilities placed at the disposal of former members of the United States forces are available for former members of the Canadian and Imperial forces. The American Red Cross has also, at the request of the department, extended its scope of usefulness in rendering aid to disabled former members of the Canadian and Imperial forces and to their dependents. The department deals with all ex-American soldiers who require treatment in Canada.

13. The reciprocal arrangements entered into in July, 1919, with the British Government also are working out most satisfactorily. Large numbers of former members of the Imperial forces have received and are receiving treatment in Canada and large numbers of former members of the Canadian forces are receiving treatment in Great Britain. Early in 1920, Mr. F. G. Robinson, then deputy minister of the department, visited England with a view to effecting certain changes in the agreement with the British authorities. These changes included the cancellation of the arrangement under which artificial limbs were to be provided by the British Government for former members of the Canadian Forces, and the establishment by the department, in lieu of this arrangement, of a fitting depot in London, England.

14. Special mention should be made of the report of the Board of Tuberculosis specialists who toured Canada during the summer of 1920. This report, a summary of which is given in the medical section, is a pronouncement of the greatest value and is likely to be of material assistance not only in the work of the department in Canada, but to other Governments and organizations which may be called upon to deal with the problems incidental to the operation of sanatoria and the after-care of ex-sanatorium patients.

15. Commencing on the 1st January, 1921, the department has taken over the administration of the outside offices of the Board of Pension Commissioners for Canada. This is a step towards a more centralized, convenient and economical administration in the districts outside Ottawa of the work undertaken by the Government on behalf of former members of the Canadian forces.

16. During the year there have been certain changes in the head office personnel. Mr. F. G. Robinson, Deputy Minister, resigned and was succeeded by Mr. N. F. Parkinson, previously Director of Vocational Training. Major E. Flexman, D.S.O., Assistant Director of Vocational Training, has been appointed Director, and has also assumed the duties of Director of Administration. Dr. E. G. Davis, C.M.G., Director of Medical Services, has become a member of the Board of Pension Commissioners for Canada and has been succeeded by Dr. W. C. Arnold. Major L. L. Anthes, Director, Information and Service, resigned to re-engage in business in Toronto. Mr. J. H. W. Bower, General Superintendent, Engineering Branch, resigned and was succeeded by Mr. W. H. George. Major C. G. Arthur, D.S.O., Chief Inspector, has been transferred to the London England, office of the department, as Overseas Representative.

17. During the last session of Parliament, a parliamentary committee sat for several weeks and heard a large amount of evidence on the subject of re-establishment. Various recommendations were made by Parliament, based on the report of that committee which have since been embodied in Orders in Council, copies of which appear in the appendices to this report.

18. Owing to unemployment among former members of the forces during the present winter, two Orders in Council have been passed, one providing for free medical treatment to all former members of the forces who require the same and the other for relief to those who are unable to secure employment and who are pensioners or have received vocational training on account of disabilities due to military service. The administration of this work is in the hands of the Treatment and Training Branches of the department.

19. On the demobilization of the Information and Service Branch, the finding of employment for handicapped cases was undertaken by the Employment Section of the Training Branch. It was felt that special attention should be given, as long as it might be required, to this class of applicant for employment. The work of the department in this direction has been most successful.

20. Owing to the experience gained by the officials and staff of the department it has been possible in many directions to reduce the staff without detriment to the quality of the work. The large decrease in the number of vocational students has necessarily resulted in a corresponding decrease in the number of instructors and others engaged in this work. The total staff on December 31, 1919, was 8,121. Owing to the increase in work during the early part of 1920, the number was augmented to 9,035 during March. The number as at December 31, 1920, was 5,779.

21. During the last fiscal year the estimates amounted to approximately $40,000,000. It is anticipated that the expenditure for the ensuing fiscal year will be less than half this amount.

22. The sections of the report dealing with separate branches have been prepared by the heads of those branches as follows:—

Treatment—by Dr. W. C. Arnold, Director of Medical Services and by Dr. C. B. Farrar, Psychiatrist.

Dental—by Dr. R. B. O'Sullivan, O.B.E., Director of Dental Services.

Orthopædic and Surgical Appliances—by Major R. W. Coulthard, Director, Orthopædic and Surgical Appliances Branch.

Training—by Major E. Flexman, D.S.O., Director of Vocational Training.

Information and Service—by Major L. L. Anthes, late Director of the Information and Service Branch, and by Major R. O. Wheatley, M.C.

Administration—by Major E. Flexman, D.S.O., Director of Administration.

Engineering—by Mr. W. H. George, General Superintendent of Engineering.

Accounts—by Capt. J. F. Waddington, Supervisor of Expenditures.

Soldiers' Comforts—by Mrs. Arthur Van Koughnet, Honorary Superintendent of that work.

I have the honour to be, sir,

Your obedient servant,

E. H. SCAMMELL,

Assistant Deputy Minister and Secretary.

Ottawa, January 31, 1921.

TREATMENT BRANCH

MEDICAL DIVISION

The function of the Medical Division of the Treatment Branch of the Department of Soldiers' Civil Re-establishment has been materially added to during the current year. Hospitalization and treatment is provided for the following classes of cases:—

(1) All ex-members of the Canadian Forces, wherever resident, for treatment of disabilities caused or aggravated by service, or recurrences of such disabilities.
(2) Ex-members of the Canadian Expeditionary Force and of all Imperial Forces resident in Canada for any disability, with certain exceptions, for which treatment is requested within one year after discharge from the service, or from the department in cases where treatment has been continuous since discharge from the service.
(3) Ex-members of the Canadian and Imperial Forces suffering from insanity, for whom custodial care is provided.
(4) Cases of long duration and cases for whom special institutions are maintained.
(5) Ex-members of the Imperial Forces resident in the United States who require treatment for disabilities caused or aggravated by service.
(6) Ex-members of the United States Forces resident in Canada for disabilities caused or aggravated by service.
(7) Ex-members of the Allied Forces who were pre-war residents of Canada and who require treatment for disabilities due to service.
(8) Members of the Permanent Force of Canada, at the request of the Department of Militia and Defence.
(9) Vocational students for any disabilities arising while they are under training.

In addition to the foregoing, the Medical Division assumes the responsibility for:—

(1) Provision of specialist examinations, X-ray reports and laboratory work for the Board of Pension Commissioners for Canada.
(2) The supervision from a medical and surgical standpoint of the supply of major and minor orthopædic appliances.
(3) The decision as to eligibility for dental treatment for ex-members of the Canadian or Imperial Forces.
(4) The organization and direction of a Nursing Social Service for the follow-up and after-care of ex-members of the Canadian and Imperial Forces who have been discharged from the treatment strength of the department.

Organization of Medical Division

The general administration of the Medical Division is under the control of the Director of Medical Services at the head office of the department in Ottawa. All questions of policy, the direction and employment of staff, as well as the purchase and distribution of medical and surgical supplies are directed from head office.

Physicians in charge of the Foreign Relations, Neuro-Psychiatric and After-Care sections are also located at Ottawa, as well as the chiefs of the Dietary section and the Medical Stores section.

The Dominion of Canada is divided into eleven units which correspond for the most part with the provinces, excepting that the province of Ontario is divided into three units, on account of its size and population.

The medical administration of each unit is under the supervision of a Unit Medical Director, assisted by an Administrative staff. His responsibility includes the organization of hospitals, sanatoria, dispensaries and clinics, as well as the supervision of the treatment of patients of the department in private or public institutions. Each institution controlled by the department is administered by a Medical Superintendent who is directly responsible to the United Medical Director.

The personnel of the Unit Medical Director's staff includes specialists in medicine and surgery, most of whom are employed either on a part-time basis or schedule of fees. Specialists are also attached to institutions of the department or are available in the event of their services being required.

In each of the smaller towns and villages throughout Canada, as the necessity has arisen, medical representatives have been appointed in order that any necessary treatment may be provided, without delay, and arrangements have been made for admission to a suitable institution where this is required. A definite procedure has been established for the rendering of reports and the keeping of the necessary records of the work done.

The department is at the present time operating twenty-five (25) hospitals and sanatoria with a total bed capacity of 5,152 (see schedule pp. 37, 38). During the year of 1920, 17 hospitals and sanatoria operated by the department, with a total bed capacity of 2,087, have been closed, and three special institutions with a bed accommodation of 1,225 have been opened.

On December 31, 1920, the department had on strength for treatment 6,431 patients, of whom 5,893 were in-patients and 538 out-patients, totally incapacitated. The in-patients were classified as follows:—

General	3,740
Tuberculosis	1,260
*Insane	893
Total	5,893

These were distributed as follows:—

(1) In General Treatment Hospitals	3,798
(2) In Tuberculosis Sanatoria	1,249
(3) In Neuro-Psychiatric Hospitals	846
Total	5,893

The total number of patients who received active hospitalization during 1920 was 31,368.

In addition to the work shown above as active hospitalization, the department operates general and special clinics for the treatment of recurrent war disabilities among those ex-members of the forces who are in need of treatment of a nature which does not demand hospitalization and which permits the patient to carry on at his ordinary occupation. The clinics are:—

(1) General Treatment—(Medical and surgical).
(2) Special Sense—(Eye, ear, nose and throat).
(3) Genito-Urinary—(All diseases of the tract); and
(4) Chest Clinics.

* There is a difference of 168 between this figure and the figure shown in the table on page 9 (1,061). The reason is that the figure quoted above (893) represents those who have been certified to be insane and are undergoing treatment under the provisions of Order in Council P.C. 1993, while the larger figure includes the number who may be described as "mental," some of whom have not yet been certified as insane

The enormous amount of work covered by these clinics is shown by the fact that during 1920 the treatments given numbered 447,142.

The following figures give the total number of patients treated by the Military Hospitals Commission and the department:—

July 1, 1915, to December 31, 1916—by Military Hospitals Commission, approximately	22,742
January 1, 1917, to March 31, 1918—by Military Hospitals Commission	28,258
April 1, 1918, to December 31, 1919—by Dept. of S. C. R.	34,554
January 1, 1920, to December 31, 1920—by Dept. S.C.R.	23,591
Total	109,145

CLINICAL TREATMENTS

May 1, 1919, to December 31, 1919—by Dept. S. C. R.	126,057
January 1, 1920, to December 31, 1920—by Dept. S. C. R.	447,142
Total	573,199

REPORT OF OPERATIONS, NEUROPSYCHIATRIC BRANCH

The appended table shows the number of nervous and mental patients undergoing treatment on the strength of the department in the several units month by month during the calendar year 1920.

Neurological Cases.—Prior to January, 1920, our returns showed officially no so-called nervous or neurological patients, inasmuch as patients belonging to this category remained up to this time under treatment in special C.A.M.C. hospitals. At the beginning of the present year, when these hospitals were turned over to the Department of Soldiers' Civil Re-establishment, there were transferred with them 226 patients who had been classified as "neurological." It will be seen that the number of "neurological" cases has steadily increased, reaching a maximum, from all sources, of 446 during December. Cases classified as mental have shown a similar increase, reaching a maximum of 1,061 during December.

The most striking fact revealed by this table is the marked increase during the year of the total number of neuropsychiatric cases undergoing treatment. The total figures for the month of December as compared with the corresponding figures for January showed an increase of 38·5 per cent.

With regard to the "neurological" cases it is to be noted that the great majority of those still requiring consideration, representing recurrent or long-standing conditions, are cases in which the functional or neurosis element is not the major disability; but in which an underlying factor of constitutional mental abnormality or defect is present. It is this underlying factor which is much more conspicuous in the residual neuroses now under treatment than in the earlier war neuroses, which is largely responsible for the facility with which symptoms recur or their resistance to treatment. Sufficient observation frequently results in the reclassification of such cases, considering them no longer as primarily functional neuroses, but rather according to their fundamental psychiatric diagnosis, whether of mental defect, psychopathic inferiority, or other psychotic condition.

"Shell Shock."—From time to time complaints have been heard to the effect that cases of "shell shock" had been transferred to provincial hospitals for the insane. Such complaints have in all cases been shown to be utterly without foundation, in that the policy of the department to transfer only cases of definite mental disability to the provincial hospitals has been rigorously carried out.

In this connection it is to be observed that a sharp line of demarkation which is popularly assumed as possible between the neuroses and psychoses so-called is always difficult and in a great many cases utterly impossible to draw. This is not the place to enter into the reasons for this circumstance, but the fact should be borne in mind. It is perhaps also superfluous to remark, after the universal understanding which has gradually come about, that the term "shell shock" is one altogether to be avoided; and that in particular it is inapplicable to cases of nervous or mental disability of whatever type, as observed in Canada. Attention is also drawn to the fact that the popular idea that certain cases may begin as "shell shock" and terminate in chronic insanity, is wholly erroneous.

Taking the neuropsychiatric disabilities as a single group the general plan of disposal has been as follows:—

Clinics.—In the several units special observation wards are conducted in the departmental general or base hospital. To these wards are admitted mild cases, emergency cases, or cases for observation, classification and the determination of further treatment indications. Such observation wards have been conducted in institutions as follows:—

Shaughnessy Hospital, Vancouver, B.C.
Colonel Belcher Hospital, Calgary, Alta.
Strathcona Hospital, South Edmonton, Alta.
Earl Grey Hospital, Regina, Sask.
Tuxedo Hospital, Winnipeg, Man.
Brant Hospital, Burlington, Ont.
Davisville Hospital, Toronto, Ont.
Sydenham Hospital, Kingston, Ont.
Prince of Wales Hospital, Montreal, P.Q.
Fredericton Hospital, Fredericton, N.B.
Camp Hill Hospital, Halifax, N.S.

Cases which can safely be handled in such clinics, and which require relatively short periods of treatment are not sent to any other institution. Cases of mental disability requiring long or permanent treatment, and particularly all cases which by reason of their disability may be a menace to themselves or others, are necessarily transferred to suitably equipped mental hospitals.

Provincial Hospitals.—During the year the department has had patients under its care in practically all the provincial institutions in Canada. In the handling of these cases the closest relations and co-operation have been maintained between the department and the several provincial institutions. Representatives of the department both lay and medical have paid regular visits to these hospitals in order to keep in close touch with the patients under treatment and to look after their welfare.

Departmental Hospitals.—During the year two special neuropsychiatric centres were opened by the department on April 1, viz: at Ste. Anne de Bellevue, Que., and London, Ont.

Ste. Anne's Hospital.—This institution was taken over at the beginning of the year from the Department of Militia and Defence under which it had been utilized as a general receiving hospital and Dominion centre for various special types of disability, including neurological cases.

The idea was conceived of maintaining this institution under the department as a general hospital, converting a portion of it into a neuropsychiatric service with very much extended scope. In this service should be handled, under suitable segregation, nervous and mental cases of any and all types, in an effort to break down the arbitrary

and altogether artificial wall of distinction which had so generally been assumed to exist, and which had on the one hand made so difficult the disposal of many cases arbitrarily classified as "neurological," and which on the other had tended unduly to isolate and create prejudice against other types also arbitrarily classified as "mental."

The object in view in planning the service at Ste. Anne's Hospital was to provide suitable accommodation and treatment for any patient coming in the neuropsychiatric category whether mild or severe, acute or chronic; and in addition to render easy the transfer from ward to ward according to the patient's condition and needs, regardless of classification or clinical diagnosis; and further by making the neuropsychiatric service a part of a large general hospital service, to render more easily available than is usually the case with mental patients any special or expert medical or surgical treatment which might from time to time be required, such patients if suitable being transferred directly to medical or surgical wards when such treatment is necessary.

It is confidently believed that the year's operations at Ste. Anne's Hospital have demonstrated the wisdom of the motives which actuated its planning and organization. The work has been in many respects experimental, but is believed to have resulted in affording as good and efficient treatment as possible for all types concerned without distinction. Moreover, the hospital serves to promote truer conceptions as to the nature of psychiatric disabilities and their indications and needs.

Total number of neuropsychiatric patients all types under treatment Ste. Anne's Hospital up to December 31, 1920	416
Discharged—	
Recovered	88
Improved	38
Unimproved	5
Died	7
Total	138
On strength December 31, 1920	278

The first mental patients were received at Westminster Hospital, London, at the end of March, 1920, the same time as at Ste. Anne's Hospital, these patients being transferred from the Cobourg Military Hospital, which was closed March 31. At the same time a number of the patients and staff were transferred to Westminster Hospital from the department's institution for mental cases at Newmarket, Ont. The latter institution closed its doors April 30, 1920, by which time all patients and staff not otherwise disposed of had been transferred to London.

Westminster Hospital was originally designed as an active treatment military hospital for Military District No. 1. It was turned over to the department following the signing of the armistice, being then in process of construction. It was necessary to re-cast the plans entirely in order to make the institution suitable for the purposes of a neuropsychiatric centre. Completed portions were taken over from the Public Works Department in May, 1920.

As in Ste. Anne's Hospital, there are both open and closed wards and the policy is to provide suitable accommodation and treatment for all types of neuropsychiatric disability. Among the special features of this institution are a separate tuberculosis

With respect to the statistics from Ste. Anne's and Westminster Hospitals in which the percentage of recoveries and improvements and discharge rate are seen to be considerably higher in the former institution, it is to be observed that neuropsychiatric cases originally under treatment at Ste. Anne's Hospital were almost exclusively of the functional or mild and recoverable types, and that a much higher proportion of such cases has at all times been under treatment in this institution than at Westminster Hospital. The latter institution received its initial convoys from the Cobourg Military Hospital and Newmarket Hospital, the patients in each case presenting quite largely severe and chronic types of mental disease. The clinical material of the two hospitals has therefore been quite different. This difference will gradually become less marked as the service at Westminster Hospital is developed along the lines contemplated.

pavilion for thirty patients which is an entirely independent unit; and a similarly independent isolation hospital for about twenty-five patients.

It has been common experience that tuberculosis is a frequently developing disease among mental patients and under ordinary conditions often undetected. On this account, and because mental patients suffering from tuberculosis are much more suitably treated in a mental hospital than in a tuberculosis sanatorium, it was considered essential to provide special facilities to meet this need. A medical officer who had had special experience in tuberculosis was added to the staff, and it is his duty to make all necessary examinations for the detection of cases of tuberculosis and tuberculosis suspects, and to direct their treatment. In this way not only the welfare of these infected patients, but of the hospital community in general is assured in this respect.

The isolation pavilion is designed to meet any needs which may arise in cases of contagious disease, and to minimize the dangers of epidemic.

Total number of patients under treatment Westminster Hospital up to December 31, 1920		425
Discharged—		
Recovered	7	
Improved	25	
Unimproved	15	
Deported	4	
Died	11	
Total	62	
On strength December 31, 1920	363	

At both Westminster and Ste. Anne's Hospitals hydrotherapy forms a large part of the active treatment. Perhaps the most important feature in each institution is the equipment for occupational therapy by means of which all suitable cases are provided with definite daily occupations. These occupations include both in and outdoor work of a constructive nature, and lighter occupations suitable for ward classes or bed patients. At Westminster Hospital at the close of the year somewhat over half the in-patient strength were shown as regularly employed in the various in and out-door occupations. This number will be considerably increased with the provision of new occupations and the expansion of those existing.

To this work a special medical officer has been detailed at the hospital, whose duty it is to survey all patients and make individual studies of them from the viewpoint of their physical and mental equipment, and occupational capacity and adaptability. It is believed that there is much promise in this plan of having one medical officer develop this work as his major interest. The patients reap the benefit not only of healthful employment, but the profits from the sale of their work are credited to the individual patients.

The hospital also keeps in touch with outside agencies and employers with a view to placement on trial under protected conditions of suitable cases. It is believed that the plans in operation and contemplated in connection with the occupational branch of the medical service at Westminster Hospital will go far toward the re-establishment of cases where the nature of the disability renders such result in any way possible.

Voluntary admissions.—Special legislation was secured in the Ontario Legislature permitting the operation of the Departmental Hospital at London, and reducing to the simplest possible terms the whole procedure of the admission and disposal of mental patients.

One of the most important features of this procedure is the authority to receive voluntary cases. Any nervous or mental patient in need of treatment regardless of his clinical diagnosis is entitled to sign a voluntary application form by virtue of

which he can be received for treatment, and without any further formalities. It is a matter of especial gratification that of the nervous and mental patients, all types, on the hospital strength as of December 31, 1920, 52·6 per cent were on the voluntary basis.

At the present time voluntary admissions are legal in four provinces. It is believed, however, that so high a percentage as that just quoted is unequalled in any other hospital. This fact alone should serve to indicate the character of the work carried on at Westminster Hospital and largely remove the objections which are often encountered to sending patients to mental hospitals where admission is by the process of commitment with the usual legal machinery by which the patient is formally deprived of his liberties.

With the further development of the hospital and the releasing of additional accommodation for milder cases it is believed that the percentage of voluntary admissions can be materially raised.

In the province of Quebec legislation of a similar nature with reference to the operation of Ste. Annes hospital is pending.

With the accommodation which has become available at the two departmental neuropsychiatric centres it has been possible to carry out a considerable number of transfers from provincial and other institutions. Such transfers have been earliest carried out from neighbouring hospitals, or from institutions where over-crowding was most serious, or in cases in which it appeared that the best interests of the patients would be furthered by such transfer.

Any nervous or mental case in Canada eligible for treatment under the department and which for any reason is not suitably disposed of locally may be transferred to one of these two neuropsychiatric centres.

Epileptics.—Hitherto the problem of epilepsy has never become a considerable one. The vast majority of cases originally diagnosed as epilepsy or epileptiform, by reason of convulsive seizures, have long since been re-established. Most of the cases now encountered, in which the diagnosis of epilepsy is substantiated, are pre-enlistment conditions in which there has been a service aggravation. A few such cases are under treatment in each unit.

It is clear that all cases of epilepsy cannot be considered in a single group from the point of view of treatment. Some of them with only occasional seizures and without mental symptoms, are dealt with in observation wards in the units and occasionally as out-patients. Those with mental symptoms, or in which deterioration is pronounced, are necessarily and suitably transferred to mental hospitals. Special cases requiring institutional care are admitted either to Ste. Annes or Westminster hospital. In this way ample provision is made for the temporary or permanent disposal of such cases of epilepsy as cannot be suitably handled locally in the units; treatment is instituted with a view to reducing and maintaining at a minimum the incidence of attacks; and the peculiar occupational needs of this group of cases are provided for.

Mental Defectives, Inferiors, Border Cases, etc.—Many of these cases offer the most perplexing problems encountered in connection with the nervous and mental disabilities. All present pre-enlistment conditions with or without aggravation and with existing legislation can only as a rule be dealt with on a voluntary basis. In many instances, although by reason of the mental deficiency, a patient may be in considerable degree irresponsible, there is no provision in the several provinces for enforced supervision, except in cases coming into conflict with the law. In Manitoba legislation designed to meet this need is now under consideration.

In Westminster hospital, where voluntary admissions already predominate, it is hoped that it may be possible to segregate many of the cases belonging to these categories which may be best provided for in an institution where constructive occu-

pation according to their needs and capacities can be provided, and where especially their trainability can be studied and special classes operated for their benefit. This is another of the special functions which the neuropsychiatric centres in their further development should be able to fulfil.

Cases on the Strength under P.C. 2328.—As set forth in the general report on these cases (page 56) during the calendar year, 378 cases, presenting all types of service disability, have been taken on the strength of the department under this Order in Council, of which number 234 have been discharged and 144 remained on strength December 31, 1920. Included in these figures 134 cases, or 35 per cent, were classified as neuropsychiatric. Of these 103 have been disposed of and 31 remained on strength December 31, 1920 (see table, page 9).

In dealing with neuropsychiatric cases brought forward for consideration under P.C. 2328 it has been the policy, wherever feasible, to refer such cases either to neurological observation wards or neuropsychiatric centres for the definite establishment of their status. The great majority of cases are suitably handled in this way as strictly medical problems. This does not imply that all such cases require in-patient treatment. A certain number are capable of being handled either in institutional work-shops or other sheltered occupations outside the hospital walls.

DEPARTMENT OF S.C.R.—NEUROPSYCHIATRIC CASES ON STRENGTH- 1920.

Unit and Province.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.	
	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.	Mentl.	Nervous.
"B," N.S. and P.E.I.	44	15	43	19	52	13	49	16	41	8	41	10	39	12	40	16	39	15	38	13	37	14	37	12
"K," N.B.	16	3	19		19	7	18	1	19		19	4		3		3	1	4	1	4	1	4	1	5
"A," Que.	101	58	116	64	114	62	143	56	152	55	168	41	192	41	201	38	207	32	207	34	276	28	286	44
"C," Ont.	131	8	126	7	128	12	65	11	70	15	72	17	68	11	71	12	68	9	68	7	10	1	12	
"D," Ont.	229	31	222	37	251	42	194	32	67	39	83	104	82	139	79	136	75	125	61	108	57	112	58	132
"F," Ont.	28	22	33	29	37	35	94	36	272	53	281	47	255	16	300	54	308	58	305	64	332	56	339	65
"G," Man.	79	55	80	73	79	113	82	78	77	92	70	90	77	94	74	109	77	89	73	102	79	97	72	111
"H," Sask.	55		53		56		52		57	1	58	3	54		56	4	58	4	58	6	63	3	62	6
"I," Alta.	55	17	54	21	57	29	68	27	65	19	64	20	68	19	66	12	65	15	61	16	60	15	57	16
"J," B.C.	88	17	110	60	100	55	95	44	98	36	87	47	89	30	85	41	81	47	83	38	89	37	85	35
Totals	826	226	856	310	893	368	860	301	918	318	943	383	924	371	972	425	979	398	955	392	1,0	04 367	1,009	426
Gt. Br.	12		12		14		10		17		17		16		16		16		17		17		17	
Nfld.	2		2		2		2		2		2		2		2		1		1		1		1	
U.S.A.	14	7	17	8	20	9	24	10	26	10	26	10	26	12	28	12	28	12	34	18	32	17	33	20
New Z.	1		1		1		1		1		1		1		1		1		1		1		1	
Totals	855	233	888	318	930	377	903	311	964	328	989	393	969	383	1,019	437	1,025	410	1,008	410	1,055	384	1,061	446
Gr. Total	1,088		1,206		1,307		1,214		1,292		1,382		1,352		1,456		1,435		1,418		1,439		1,507	

NEUROPSYCHIATRIC CASES ON STRENGTH, P-C. 2328, 1920.

	Jan.			Feb.			Mar.			Apr.			May.			June.			July.			Aug.			Sept.			Oct.			Nov.			Dec.			Totals.		
	A.	D.	R.	A.	D.	R.	A.	D.	R.	A.	D.	R	A.	D.	R	A.	D.	R.	A.	D.	R.	A.	D.	R.	A.	D.	R.	A.	D.	R.	A.	D.	R	A.	D.	R.	A.	D.	R.
"A"	2	..	2	..	..	2	..	..	2	2	..	4	..	3	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..
"B"	2	..	2	..	1	1	1	1	1	..	2	1	2	1	..	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	7	6	1
"C"	..	..	..	1	..	1	..	..	..	2	..	2	4	1	5	2	1	6	1	..	7	..	2	5	..	1	4	1	..	5	1	1	5	1	1	5	13	8	5
"D"	..	..	..	9	..	9	12	1	20	8	5	23	5	6	22	3	7	18	1	7	12	3	3	12	1	2	11	..	1	10	8	3	15	8	3	20	58	38	20
"F"	..	..	..	..	..	..	4	..	4	4	1	7	1	1	7	..	1	6	..	1	5	..	2	3	1	2	2	..	1	1	..	..	1	..	1	..	10	10	..
"G"	5	..	5	5	1	9	5	1	13	1	6	8	2	4	6	..	2	4	..	1	3	..	1	2	..	..	2	1	..	3	1	..	4	..	..	4	20	16	4
"H"	..	..	..	..	..	..	..	..	..	1	..	1	1	..	2	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..
"I"	..	..	..	2	..	2	1	..	3	4	..	7	..	1	6	..	3	3	1	..	4	1	4	1	..	1	..	..	..	..	..	1	..	..	..	1	10	9	1
"J"	..	..	..	1	..	1	6	..	7	..	2	5	..	5	..	..	..	..	3	..	3	1	1	3	3	2	4	..	1	..	..	..	1	..	..	1	14	14	..
"K"	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	9	..	9	18	2	25	29	4	50	23	14	59	14	23	50	5	17	38	6	10	34	5	13	26	6	8	24	2	7	19	12	4	27	9	5	31	138	107	31

Legend—A—Admissions.
D—Discharges.
R—Remaining.

Readmissions—B—1.
D—2.
I—1.

Total readmissions 4

Actual number of cases.
A 134
D. 103
R. 31

Westminster Hospital*

"The Canadian National Committee for Mental Hygiene, being deeply interested in all developments concerning the care of insane and neurological patients, was pleased to be represented by the Medical Director, when an inspection of the Westminster Hospital, London, Ont., was made on December 29, 1920. Many well-known psychiatrists and neurologists were present at the inspection, and ample opportunity was given to see every department in the hospital. In addition to the professional men representatives of the War Veterans joined in the survey, which lasted several hours. It was a wise move on the part of the authorities of the Soldiers' Civil Re-establishment to ask for this inspection, as it proved an excellent opportunity to disarm criticism, and to show people who were interested, that a wise policy of dealing with a difficult problem is being followed.

"The general public has always been suspicious of institutions for the care and treatment of mental cases, and has to a great extent left them severely alone except when some atrocity, real or fancied, has been discussed. The process of enlightenment regarding the true facts has been slow and discouraging to psychiatrists, and yet real progress is being made. The war made plain the true facts to many groups of careful observers, and the strain imposed on the mentally handicapped by war conditions brought to the surface many things not before understood and appreciated by the average observer. Notes of sympathy and resentment were struck when it was proposed to put mentally handicapped soldiers into public hospitals, the invariable argument, why should they be submitted to such an indignity?—almost invariably being the one employed. It was not a sound argument, if the public had been doing its duty by its civilians, because the ideal situation would be one that supplied the best care possible for any sick individual whether the illness was mental, physical or both. If such care was not obtainable for the mentally diseased then there was 'something rotten in the State of Denmark,' and Provincial Governments were failing in their duty. It opened up a big question and the Military Hospitals Commission and subsequently the military authorities acted with wisdom and discretion in bowing to the popular will by providing such an institution as that at Cobourg where the same care was lavished on mental cases as would have been supplied in a well equipped general hospital.

"The object lesson has not been lost, and the Soldiers' Civil Re-establishment has been wise in continuing the policy originally adopted at Cobourg, even if it does indirectly show a certain want of confidence in the public hospitals for the insane. Of course, public hospitals are profiting by the new enthusiasms, and all over Canada the National Committee finds the most satisfactory improvement in the organization of hospitals for the mentally diseased.

"Westminster Hospital is a splendidly built institution, nearly perfect in its equipment, and represents an outlay of somewhere about two millions of dollars. No money has been uselessly expended on ornamentation and although the building was originally designed for the purpose of a military hospital it has been modified in such a way that it meets the requirements of psychiatry most admirably. It is, in every sense of the word, an inspiration to those who have wished to see better things in the care of the insane developed in Canada, and the fact that it employs a voluntary admission system to such an extent, that practically fifty per cent of the admissions are of this kind, is one of the most admirable features of the institution.

"The building ultimately will have a capacity of 500 patients. At present there are 365 on the roll, but only 304 of these are in residence; the others are on probation.

"The medical staff consists of Dr. B. T. McGhie, superintendent; Dr. W. T. B. Mitchell, neurologist; Dr. W. J. McLean, in charge of one reception wing and active

*By Dr. C. K. Clarke, Medical Director, Canadian National Committee for Mental Hygiene

treatment department—he also occupies the position of president of the Medical Board; Dr. H. J. Horn, in charge of the reception ward, also chief of staff; Dr. Nichol, in charge of the tuberculous wards 1 and 2 B; Dr. S. T. Towers, in charge of vocational therapy; Dr. H. G. Preston, head of the X-ray, hydro-therapeutic and electro-therapeutic departments. The matron, Miss C. H. Ross, is a returned nurse, who had experience at Cobourg Military Hospital, and was also in charge of "shell shock" division in France. The medical staff has the advantage of youth coupled with enthusiasm, experience overseas as well as in many of the provincial institutions, and is admirably equipped to carry on the important work entrusted to it. The matron is an enthusiast, and combines with her enthusiasm the ability to get results that are most gratifying.

"It would be difficult to imagine a better equipped hospital from the standpoint of cleanliness, good housekeeping, and excellent management. The nurses number nineteen. This includes the matron and the social service nurse. In addition to this there are twenty-three trained attendants, an occupational staff numbering eighteen, and sixteen ward aides, all trained. The occupational staff is made up pretty largely of women who obtained their training at Toronto. There are no less than sixty-three medical orderlies, men who are well trained and have an intelligent conception of the work they are to do. While their training lasts but three months, yet during that time they are thoroughly instructed in routine ward work, hydro-therapy, the method of taking care of excited patients, acute cases, and those who are intent on committing suicide. With a staff as extensive as this, better results should be looked for than are to be expected in public hospitals for the insane, where the question of maintenance is so frequently regarded as of far more importance than the welfare of the patients.

"Before referring to the institution as a curative and custodial establishment it may be well to describe some of the arrangements within the hospital. It is unusually well lighted, and those who had the designing of Westminster did not forget that it is just as important to provide solaria and places for recreation as it is to develop dormitories. The result is that nowhere can overcrowding take place, and the opportunity to deal with the individual exists on every side. Welsh quarry tile has been used wherever tiling has been necessary, with pleasing results, and the flooring of the institution has been done very largely in birch, a wood that when properly laid is one of the best of all for institutions, as it is warm in colour, has a pleasing effect, and is durable.

"The hydro-therapeutic installations to be found all through the institution are excellent, and the continuous baths so numerous that the control of excitement is a simple matter.

"The dining rooms are bright, cheerful and well equipped. A pleasing feature is that the cafeteria system is used, and evidently is satisfactory.

"In addition to the main hospital, and isolation hospital, a unit for the care of the tuberculous, a fine amusement hall, separate quarters for employees, cottages for medical officers, etc., exist, making altogether a unique institution. When it is remembered that the hospital has only been operated as a psychiatric department since May, the results achieved are somewhat surprising.

"The amusement hall is constantly in use, and three nights a week are devoted to "movies," the hospital being on a regular circuit. A weekly dance too takes place, and other entertainments are provided by the institution and by the people of the city of London, who take a deep interest in the hospital, in this way coming in touch with a situation that is only too frequently ignored by people who should be educated in regard to the care of the insane and neuropathic.

"The moot point in regard to the organization of Westminster Hospital is that regarding the type of patient to be received, some neurologists maintaining that neuro-

logical cases should not be admitted, the idea being that it is detrimental to them to be associated with distinctly mental cases, and the stigma attached to hospitals for the insane is such a well fixed thing in the eye of the public that harm must result. It is a difficult question, but a visit such as that made yesterday does much to disarm criticism of this kind, it being so evident that the cases received in this hospital are truly those likely to be benefited by the treatment. The voluntary admission system, too, does away almost entirely with the objections that might be urged where admission by certificate is insisted on. It is a difficult matter to differentiate between the so called functional neuroses and cases which are to be regarded as curable from the psychiatric standpoint. At all events, any objection that might be urged with some degree of success may easily be silenced by erecting a further unit that might be used for the study and cure of so-called 'problem cases.' No doubt this point will be considered in due course by those in authority.

"As must ever be the case in a successful hospital for the mentally diseased, occupational therapy is the keynote in the management, and it is not being lost sight of in this institution. With a farm of one hundred acres, with unlimited capacity for development of truck gardens, horticulture, etc., outdoor employment can be found for all those who require it, and as Mr. Turley* suggested in an admirable speech at the conclusion of the visit, if facilities for raising plants on a large scale during the winter months could be provided, another outlet for the energies of the patients might be found. Employment is provided on an extensive scale, and might be further developed with advantage, because different individuals require different occupations—what appeals to one does not attract the other—and any one who knows how much the success of a hospital depends on the psychological study of the individual, realizes that considerable ingenuity has to be shown in the finding of the right thing for each patient to do. Drill classes, for example, are greatly enjoyed by certain types, and yet are useless for others; bead stringing is not an industry attractive to everybody, and basketry might prove monotonous; carpentry appeals to some, others are devoid of the mechanical ability to succeed, and so on. Industries available at present in Westminster are physical drill, carpentry, shoemaking, weaving, basketry, raffia work, furniture-making, wood-carving—an excellent industry for certain artistic kinds because it involves so little in outlay for material and takes so much time. Other occupations are contemplated, and will in a short time be introduced. If any criticism is to be made of the arrangements for occupational therapy in Westminster, it is, that trivial ocupations possibly receive more attention than they deserve, but under conditions of development that was apparently unavoidable. At all events, the great majority of the patients in Westminster are occupied at something, and an outlet is found for the wares produced, in a ready market. A recent sale netted in the neighbourhood of one thousand dollars, and this money was given to the patients after the actual cost of material had been deducted; in some cases the money was deposited to the credit of the patient, in others given to them as they find use for it at an excellent canteen which exists, where the prices are kept within reasonable limits. This idea is a good one, and rather unusual in such institutions. It encourages the patients to produce marketable wares, and lessens the feeling of humilation which might result if they were not allowed to participate in the profits of their industry.

"Such a policy would have been considered heresy in the good old days, and the idea of considering a group of the mentally diseased as worthy of any degree of trust would have been opposed. It is true though, that the more the effort is made to humanize the patients even in custodial institutions the better will be the results. I deliberately did away with so called refractory wards in an institution over which I presided and as far as possible, beautified the corridors where it had been the custom

*Provincial Secretary of the Ontario Command of the G.W.V.A.

to segregate cases of excitement. The results were more than gratifying, and the point of view was pretty well illustrated by one chronic disturber who said to me, 'Doctor will you kindly have me removed to some other place where the surroundings are less beautiful as I hate to smash the pretty ornaments and bric-a-brac here.' In other words, she was receiving a healthy lesson in self-control. As is to be expected a great many of the wards are open, and everything possible is done to make the patients feel that they are visitors rather than prisoners. The experiment with voluntary admissions is a most encouraging thing, and 50 per cent of the recent admissions come under this heading. The number is steadily increasing, and yet of 320 admissions no less than 140 were of the voluntary type.

"We took occasion during our visit to question many of the patients closely regarding their impressions of the hospital, and the treatment they were receiving. It so happened that some chronic kickers were shown, and it was reassuring to find that these patients admitted that no fault could be found either with the surroundings, the food, or with those who were looking after them.

"The aim of Dr. Farrar, who is largely responsible for this splendid development, is to make Westminster an active treatment centre, and its usefulness may be continued for many years with satisfactory results.

"We were received on our visit by Dr. Alexander, the Assistant Medical Director for Western Ontario, who was indefatigable in his attention to us, and who has played an important part in the development of Westminster Hospital.

"Dr. McGhie, the superintendent, had the advantage of association with Major Young in Cobourg, and much of the excellent work that was carried on there is being continued with the best ideals ever presented to the subordinates.

"When Westminster is fully developed along the lines proposed, it will be an object lesson to the provincial institutions, where the superintendents are enthusiastic enough to produce results, but have never been given equipment in the way of trained help, vocational assistants, trained nurses of the best type, trained aides, and intelligent orderlies.

"There is little use in blinking at these facts, and just as long as governments will insist on managing hospital affairs themselves without the aid of an expert commission the results will be discouraging. Political exigency has ever been the curse of government institutions, and will remain a detriment until a properly constituted commission is appointed—a commission that has no other interest than that of serving the public in the most intelligent way possible. It will mean a large increase in maintenance, but the benefits and results will more than justify the expenditure.

"Of course, the psychopathic hospital will minimize the difficulties to be faced, very materially, but the educational effect of such an institution as Westminster will bring about the reforms asked for much more quickly than any other method."

SOCIAL SERVICE SECTION.

In the reconstructive work of rehabilitation of the disabled soldier, the Social Service nurse has become an essential and indispensable part of a programme which has for its aim the restoration, preservation and promotion of health among those ex-soldiers who come under the care of this department.

This is a specialized nursing activity, and the Social Service nurse is to be regarded not merely as an attendant upon the sick, but rather as an educator and reformer. She must possess, in addition to the educational and technical qualifications incidental to her professional calling, a special experience and training in the fundamental sciences of psychology, sociology, hygiene, sanitation and nutrition.

Participation in or duplication of the work for which the different Public Health organizations are responsible is avoided by mutual co-operative arrangements with Public Health officials. All Social Service work is under the direction of the Unit Medical Director or other physician, and is carried out only in accordance with his expressed instructions.

The character of the work done varies with the type of case, and these may be divided roughly as follows:—

1. *Tuberculous cases.*—The period after discharge from sanatorium of an arrested or quiescent tuberculous case must be very carefully considered and planned in order to guard against relapse of the disease.

It has been found that the sudden change from perfectly ordered hygienic surroundings, with good food, fresh air and skilled medical attention, to the conditions under which the less well off must so frequently live and work, is a strain which many cannot withstand.

Following discharge from sanatorium, each individual case is visited at his home within one month of his discharge, and at varying intervals subsequently, according as the circumstances of the case demand. The Social Service nurse, in visiting the home of a tuberculous case, observes existing conditions in the environment, and, when indicated, instructs and demonstrates to the patient and members of the household the precautions which must be taken to avoid spread of the disease. She brings to the aid of the patient such measures of relief as are required, and helps to regulate those factors in the daily life of the household which have a direct relation to health—cleanliness, diet, clothing, fresh air, sleep, and recreation.

In this way, the Social Service nurse not only supplements the efforts of the physician, but also is able, as a result of her technical training, to report new conditions which are unfavourable, and observe symptoms which indicate recurrence of the disease, necessitating readmission to sanatorium.

2. *Neurological and mental cases.*—The Social Service nurse helps the patient and household to meet the difficulties involved in the period of readjustment from hospital to home, adding thereby to the peace of mind which is so essential to prompt recovery. She assists the patient in carrying out the physician's instructions, helps to eliminate or readjust contributory factors in the environment, teaches the principles of mental hygiene and generally exercises supervision until the need therefor is no longer present.

It is frequently desirable that an investigation be made of home conditions before such a case is discharged from hospital, as this information may have a direct bearing on the duration of hospital treatment which may be required.

3. *Out-patients, class one.*—As treatment of this class of case is for the most part of short duration, and as they are usually of a light medical or surgical nature, there are fewer indications for Social Service investigation and this is, as a rule, only carried out at the request of the individual or of the physician in charge of the case.

Such visits may be made for the purpose of providing actual nursing care, for investigation and report as regards home conditions, or for the purpose of ascertaining if the individual is carrying out the instructions as given by the physician in charge, relative to his treatment.

4. *Special cases.*—These comprise those cases for whom special provision is made under P.C. 2328. For the guidance of the Unit Disablement Board in dealing with applications for assistance, it is necessary that an investigation of home conditions be made in each instance to verify the claims made by the applicant.

5. *Co-operative visits.*—Other reports of an unclassified nature are frequently required by other branches, departments or units, relative to home conditions, to investigate claims made by individuals and for various other purposes.

The Social Service organization of this department being maintained only for the care and welfare of disabled soldiers is necessarily of a limited character. There are throughout Canada thirty-four Social Service nurses and as an indication of the work accomplished by that organization during the past year, the following table is appended, summarizing the visits made.

SOCIAL SERVICE INVESTIGATIONS

Tuberculous cases	3,884
Out-patients (Class I)	5,884
Problem cases (P.C. 2328)	2,013
Neurological and mental cases	2,921
Co-operative and unclassified	19,238
Total	33,940

DIETARY SECTION

During the orgnization of the D.S.C.R., it was considered essential to establish a Dietary Branch in connection with the general plan of hospitalization. With this in view, a survey was made of the dietetic services in the large modern hospitals, and as a result of these observations an efficient dietary service was installed in the various institutions controlled or operated by the department. A graduate dietitian is in charge of the entire hospital cuisine, whose duties comprise the provision of suitable diet for patients, as prescribed by the attending physicians, as well as meals for the general hospital staff. In order to meet the precarious appetities which must necessarily exist among patients in hospitals, menus are carefully worked out so as to furnish a sufficiently wide range of choice to meet the individual demands of the patients.

The Dietary Section in a departmental hospital or sanatorium is called upon to furnish meals for the entire hospital population, which range from 50,000 to 4,000 meals per month. The duties of the dietitian are practically the same in each institution, only varying in the volume of work performed with the size of the hospital. The routine work comprises:—

1. Ordering of monthly, weekly and daily food supplies through the Purchasing Branch of each unit.
2. Checking of supplies as they are issued.
3. Overseeing of the preparation of food.
4. Supervision of distribution and serving of prepared food.
5. Cost accounting of the dietary branch.
6. Preparation of menus.

Daily menus are worked out by the dietitians under three general headings, as follows:—

1. Suitable meals for patients on general diet.
2. Proper meals for employees on full duty.
3. Specially prepared diets as prescribed by the medical staff.

Patients requiring highly specialized diets, e.g., diabetics and nephritics, are concentrated in a given hospital in each Unit in so far as it is practicable, as the preparation of such diets entail considerable waste of food supplies and call for so much personal attention on the part of the dietitian and kitchen personnel that the general routine of the kitchen is more or less disturbed. Therefore, it was considered

much more satisfactory both from a standpoint of economy and smooth operation of the kitchen, to place these patients all under one roof. Under this arrangement, it was found that special diets could be prepared with the absolute minimum of food loss.

Sanatorium cases present a somewhat different problem as compared with general hospital patients in regard to dieteties. As a result of their disabilities and long hospitalization, due consideration must be given to fickle and indifferent appetites, and every effort is made to prepare the meals in the most appetizing and attractive manner, in order to encourage patients to eat so that their body weight, which is so essential in the treatment of these cases, may be maintained and increased in so far as this is possible, by proper feeding. As a result of the special articles of diet that are required for patients undergoing sanatorium treatment, the food costs are higher than is the case in general treatment hospitals.

There are many factors which enter into the cost of operating the Dietary Branch in each institution. No fixed establishment can be laid down for any given hospital, the size of the staff being materially affected by the type of hospital construction, kitchen equipment and number of "tray patients" in the institution, all of which may increase or decrease the operating expenses. The present high cost of foodstuffs, culinary equipment, cleaning materials and increased wages demanded by kitchen help, have added considerably to the general operating charges.

Conservation of kitchen by-products is carefully supervised with the result that considerable revenue is derived from this source, all moneys so obtained being turned in to the Accounting Branch.

The policy of establishing a Dietary Branch in the various hospitals has been fully justified and has resulted in an excellent food service and considerable economy to the department.

FOREIGN RELATIONS SECTION

Reciprocal arrangements have been entered into by the department with the Governments of Great Britain (for the British Isles, South Africa and the Crown Colonies), New Zealand, Newfoundland and the United States, whereby ex-members of the Canadian forces resident in these countries may be given treatment for war disabilities, and ex-members of the forces of these countries resident in Canada, may be given treatment for war disabilities, by the department. The arrangements for the treatment of ex-members of the Canadian forces resident outside of Canada, and of ex-members of the Imperial forces resident in the United States, are made by the Foreign Relations Section of the Department at head office, and include the keeping of records, the issue of pay and allowances, etc.

In the United States, treatment is provided by the United States Public Health Service, in accordance with procedure established by the Bureau of War Risk Insurance. So far as possible the department has advised all ex-members of the forces resident in the United States, regarding the arrangements made, in order that they may know exactly what action to take, in the event of their requiring treatment for disabilities caused or aggravated by service.

In general, cases, which require treatment for short periods only, or in which, for climatic or family reasons, it is considered desirable to continue treatment in the United States are admitted to institutions under the supervision of the United States Public Health Service, but it is the policy of the department to return to Canada, cases which require special treatment, such as neurological or orthopædic cases, and those which will likely be of long duration.

The American Red Cross has been of splendid service in co-operating with the department by providing advances of money, and adjusting domestic difficulties. The work ordinarily performed by the Social Service section of the Medical Branch in Canada is carried on in the United States by the American Red Cross. All branches of the American Red Cross are aware of the arrangements made with the Bureau of War Risk Insurance, and the United States Public Health Service, and ex-members of the forces requiring treatment, are referred by them to the proper authorities.

Arrangements have also been made by the department for the provision of treatment to ex-members of the French forces resident in Canada, who are suffering from disabilities due to service, and the department is reimbursed by the French Government for the expense involved.

The treatment of ex-members of the Canadian forces resident in Great Britain, is under the supervision of the Overseas Medical Representative of the department, 103 Oxford street, W. 1., England.

Statistics, July, 1919, to December, 1920

EX-MEMBERS OF UNITED STATES FORCES IN CANADA

Cases under treatment	18*	
Cases under investigation	50	
Total	68	
Cases disposed of—		
Treated and discharged	35	
Reports secured (no treatment required)	162	
Reports requested (men returned to United States)	166	
Total	363	
Grand total		431

EX-MEMBERS OF CANADIAN FORCES IN THE UNITED STATES

In-patients on the strength of the D.S.C.R.	111	
Cases under investigation as in-patients	74	
Total	185	
Out-patients, Class 1	7	
Cases receiving dental treatment	15	
Cases under investigation	205	
Total	227	
Total	412	
Cases disposed of—		
Discharged from hospital	453	
Out-patients treated at clinics	166	
Orthopædic and surgical appliances supplied	154	
Service disability disclaimed	140	
Treatment not required	785	
Returned to Canada	251	
Men not located	157	
Died	58	
Total	2,164	
Grand total		2,576

* 15 of these are out-patients, Class 2.

EX-MEMBERS OF IMPERIAL FORCES IN UNITED STATES

In-patients on the strength of the D.S.C.R.	42	
Under immediate investigation as in-patients	44	
Total	86	
Cases under investigation	90	
Total	176	
Cases disposed of—		
Discharged from hospital	116	
Out-patients treated at clinics	64	
Orthopædic and surgical appliances supplied	46	
Service disability disclaimed	17	
No action required	117	
Returned to England from United States	5	
Returned to Canada from United States	30	
Men not located	35	
Died	16	
Total	476	
Grand total		652

BOARD OF TUBERCULOSIS SANATORIUM CONSULTANTS—SUMMARY OF REPORT

In April, 1920, the Director Medical Services of the Department of Soldiers' Civil Re-establishment appointed a Board of Tuberculosis Sanatorium Consultants, consisting of the following specialists in the treatment of tuberculosis:—

Dr. C. D. Parfitt (chairman), Medical Director, Calydor Sanatorium, Gravenhurst, Ont.

Dr. W. M. Hart, formerly O.C., Special (Tuberculosis) Hospital, Lenham, Kent, England, and Saskatchewan Sanatorium, Fort Qu'Appelle, Sask.

Dr. J. R. Byers, Medical Superintendent, Laurentian Sanatorium, Ste. Agathe des Monts, P.Q.

Dr. A. F. Miller, Medical Superintendent, Nova Scotia Sanatorium, Kentville, N.S.

Dr. D. A. Stewart, Medical Superintendent, Manitoba Sanatorium, Ninette, Man.

This board was instructed by the Director Medical Services to study, in general, the whole question of the treatment of tuberculosis occurring amongst the ex-members of the Canadian and Imperial forces in Canada. The greatest liberty of investigation was afforded at all points. Business details were not specified as part of the inquiry, but special reports were to be made in detail on the several sanatoria, regarding:—

(1) The suitability, sufficiency and efficiency of the plant in general, and its equipment and furnishings.
(2) The personnel in general, and especially the medical personnel as regards special training and experience in the diagnosis and treatment of tuberculosis.
(3) Medical standards and records as regards method and efficiency.

(4) Conclusions regarding patients examined by the board:—

(*a*) Patients who have been under treatment for a longer period than five months, with a view to determining whether the department is justified in retaining them longer in the sanatorium for treatment.

(*b*) Patients of uncertain diagnosis, or those under treatment for conditions other than pulmonary tuberculosis, but who, in the judgment of the medical superintendent, require prolonged sanatorium treatment.

(*c*) Any special cases for whom a medical superintendent required consultation.

(*d*) All patients in whom poison gas may have been a factor in producing illness (especially those with official histories of exposure), with a view to determining the etiological association of the exposure with the condition for which the patient is being treated.

(5) The quality, source of supply, preparation and service, of the food.

(6) Complaints, which, without prejudice, may have been brought forward by patients, staff or employees, individually or assembled, by the invitation of the board. These to be forwarded to the Director Medical Services with comments and recommendations.

(7) Recommendations as to:—

(*a*) Necessary or desirable additions to, or alterations of, plant and equipment, especially in regard to improvement of medical facilities, viz: artificial pneumothorax apparatus, X-ray department, laboratory, dental department, provision for natural or artificial sunlight, hydrotherapeutic arrangements, desirable development of a medical library, occupational therapy and vocational training.

(*b*) Improvements of medical standards and records.

(*c*) Modifications of service and policy.

(*d*) Concentration of patients wherever practicable, with the closing of unnecessary or less-efficient sanatoria.

In addition to the care of patients under treatment the general question of the after-care, and employment after discharge from the sanatorium of the tuberculous ex-service man was to be given consideration. In connection with this subject a special report was required regarding the applicability of Order in Council P.C. 2328 to the sanatorium dischargee.

The board assembled at Ottawa on April 16, 1920, and reported verbally four months later, after having completed its survey of the twenty-six sanatoria in Canada and the special clinics treating D.S.C.R. patients. The several matters to be considered are dealt with in a series of reports as follows:—

(1) The application of Order in Council P.C. 2328 to the tuberculous ex-service man.

(2) Medical statistics regarding (*a*) patients in residence, (*b*) patients discharged.

(3) The present and future distribution of D.S.C.R. patients in sanatoria.

(4) A critical review of the several sanatoria inspected with classified notes on details.

(5) A classified record of complaints and suggestions from patients, staffs and employees, with comments.

(6) The after-care, post-sanatorium employment, and possible re-establishment of the tuberculous ex-service man.

(7) A general review of the tuberculosis problem as regards the ex-service man, with conclusions and recommendations.

Medical Statistics*

INCIDENCE OF TUBERCULOSIS IN THE C.E.F.

The 8,571 so-called tuberculous ex-service men treated by the department to April 30, 1920, when proportioned to the 590,572 men entered in the C.E.F., give an incidence rate of 2·5 per 1,000, yearly, for the 5¾ years considered. This will be referred to as the crude incidence rate.

The average number of men under arms throughout the period of the war, with deductions for dead and missing, has been estimated at 317,000. The annual incidence rate is, therefore, more fairly based upon this number, and is 4·7 per 1,000. Since 8·6 per cent of the patients treated in sanatoria were diagnosed as non-tuberculous, ·4 per 1,000 should be deducted, leaving 4·3 per 1,000 as tuberculous. These are further divided into bacillary positive cases, 1·9 per 1,000 (44 per cent), and clinically tuberculous cases, 2·4 per 1,000. This rate of 4·3 will be referred to as the corrected incidence rate.

COMPARISON WITH B.E.F.

The incidence rate of tuberculosis in the British Forces, obtained by proportioning the total cases to total enlistments, without correction for the annual average under arms, is 1·07 per 1,000, yearly. It is understood that, in Great Britain, the presence of bacilli was necessary for a diagnosis of tuberculosis; so that, instead of comparing the rate of 2·5 per 1,000, similarly obtained for the C.E.F., with the British rate, the crude rate for bacillary positive cases only should be used, 1·1 per 1,000 (44 per cent of the 2·5 crude rate). The incidence rate is, therefore, approximately the same in the two armies; but, in Canada, 1·4 per 1,000 have been treated in addition as being probably tuberculous.

COMPARISON WITH A.E.F.

The rejections for tuberculosis from the first million men drafted into the American army, were 8·73 per 1,000—more than six times the death rate estimated for men of military age in Canada. This was quite a non-selective draft, and many cases of active tuberculosis were necessarily included. The break-down rate during service (incidence) was 2·9 per 1,000, rather more than the probable comparable incidence (2·5) of the C.E.F.

COMPARISON WITH CIVIL LIFE

A comparison between the incidence of tuberculosis in the army and in civil life, while of interest and importance, may only be approximated. Too short a time has

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* Note.—(1) Because of the month in which this inquiry commenced, the numbers considered are as they were on April 30, 1920, unless otherwise stated.

(2) Apparent discrepancies in number are due to the following causes:—

(a) The department records as one individual only, each patient taken on strength for treatment, no matter how often taken on strength.

(b) The sanatoria include amongst admissions and discharges patients who have been transferred from one institution to another, and those who have been readmitted for treatment. By most institutions, these are counted as separate individuals each time.

(c) Numbers recorded in aggregates are not invariably obtained from all or the same sanatoria.

(3) Computation:—

(a) Averages are invariably made from numbers, actual or computed; never from percentages.

(b) Basic numbers from which percentages are derived vary. Hence, when comparing percentages, their origins must be considered.

(c) Where it would have been unreasonable to demand a classification based upon a study of the case-records of all the patients discharged, because of the considerable number involved, serial groups of 100 cases only have been classified. These have been distributed proportionately to the total under consideration. From a classification of each serial group, the proportions obtained have been applied only to the total of the same institution.

elapsed for the death-rate from tuberculosis in the army to become reliable for comparison with the civilian death-rate. The civilian death-rate is the only index of the amount of tuberculous disease in the community at large; and, by multiplying this by various factors, estimates have been made of the morbidity, or tuberculous status, of the community, existing at any one time. It is fallacious, however, to compare this momentary status with the annual incidence, or crop of tuberculosis, yielded by the army, removed from it, and placed in sanatoria. The civilian incidence is that amount of new tuberculosis which yearly enters the tuberculous group to replace losses by death and recovery, absolute or relative. The civilian incidence, with some variation, has long been operating to evolve the tuberculous group.

It can be shown that, operating for a period of 20 years, an annual incidence of twice the death-rate will compensate losses by death; maintain an average number of 5 times the death-rate of clinically active cases; a group of equal size of less obviously active cases; and a group of arrested cases ten times as large as the death-rate. Two-thirds of this group of arrested cases (16 per cent of the incidence) will not die from tuberculosis within the period. This last group is fairly comparable with the 25 per cent of patients who do not die from tuberculosis within 20 years after discharge from the Trudeau Sanatorium. (Trudeau Sanatorium Analysis). After the 20-year period, this status will be maintained by an incidence rate one-third greater than the death-rate.

Thus, the several estimates of the relation of morbidity to mortality, the results of approximations or surveys, can be satisfied.

In Canada, the death-rate from tuberculosis in 1915, was 1·08 per 1,000 for the whole population. For men of military age, the rate has been estimated at 1·36 per 1,000 for the whole country, from incomplete vital statistics. This group had a rate of 1·06 per 1,000 in the provinces of Alberta, Saskatchewan, Manitoba and Ontario. The general rate for these four provinces was ·84. This relatively more vigorous population provided 66 per cent of the enlistments.

The development of tuberculosis will continue, somewhat modified, because of selection, in the army group, apart from all considerations of army life. The army has had the advantage of the selection of an average higher physical manhood than the average of civilian life, while the men composing it have had the advantage of regularity of life; much time spent in the open; and a higher standard of food. On the other hand, the men have undergone varied hardships of service, and have been exposed to intercurrent disease through close association in barracks, etc., to a greater extent than have civilians. Any difference between the natural civilian incidence for men of military age, and the actual incidence in the army group, will be due to army life. An incidence rate somewhere between one and one-third times and twice the death-rate (1·36 for males of military age) may reasonably be assumed to be operating in any case, as amongst civilians. This will be from 1·8 to 2·7 per 1,000. The corrected army incidence was shown to be 4.3 per 1,000. An additional incidence rate somewhere between 2·5 and 1·6 per 1,000 may, therefore, fairly be considered due to army life. This is an increase over the estimated rate of incidence for civilians of 140 per cent in the first instance, and 60 per cent in the second. Broadly speaking, there is, then, twice as much tuberculosis amongst the ex-service men of the C.E.F., as amongst civilians of the same age period, (20-44).

ADMISSIONS TO SANATORIA

The total number of admissions to twenty-two sanatoria were 9,382, and 7,570 (80·6 per cent) have been classified according to the province of enlistment. Provincial patients not classified, 1,364 (14·6 per cent of the total), cannot be distributed. The omissions are, however, fairly compensated, since, by readmissions for relapse (1,042) and transfers of patients from one sanatorium to another, the number of

admissions shown is approximately 20 per cent in excess of the number of individuals who enter sanatoria for treatment for tuberculosis. These discrepancies cannot be fully corrected at the present time.

PROVINCIAL INCIDENCE

When these groups are proportioned to the number of men enlisted from the respective provinces (the same factors for correction being applied as were used for obtaining the incidence ratio), there is found, with two exceptions, a variation in rates for the several provinces comparable with the variations for the civilian rates.

From Alberta eastward there is a fairly consistently increased incidence from 3·16 in Alberta to 9·95 per 1,000 in Nova Scotia and Prince Edward Island, the rate rising rapidly east of Ontario, while in British Columbia the rate of 4·25 lies midway between the rates for Ontario and Quebec. The exceptions are Saskatchewan, in which province the civilian rate is unduly low (due possibly to error in recording vital statistics), and Nova Scotia, which apparently has a relatively highly tuberculized population, with a greater number of breakdowns on service in consequence.

The tuberculosis in the army, then, is strictly proportionate to the amount in the civil population from which the men have been drawn. The more tuberculized the province, the more tuberculosis will be found amongst its ex-service men.

CLASSIFICATION OF PATIENTS

A classification of all the patients treated at the several sanatoria gives the composite opinion of all the physicians who, during the past six years, have undertaken the several statistical groupings, according to their individual interpretation of the criteria defined by the National Tuberculosis Association. In some cases, opinions were necessarily based upon the work of predecessors. Experience, facilities for investigation, and the degree of opportunity for intensive work, will all be variable factors in the grading of cases. Transfers from one institution to another, and readmissions for relapse, cause some confusion since they not only swell the apparent number of patients treated, but they may be graded differently both on readmission and on redischarge. The latter, moreover, are in many cases treated in some other than the original sanatorium of admission. All numbers used are the actual figures, and when numbers derived from percentages are used it is so stated. The basic groups must vary since classification for all patients cannot be obtained. These groups are, however, so large that proportions derived from any of them may fairly be applied to other groups, if other, not given, ratios are desired. Some further studies, still incomplete, cannot be included. Special analyses, at the cost of much time, have been made by the several superintendents in order to make this summary possible.

ADMITTED PATIENTS

For 8,571 tuberculous patients treated by the department, there have been more than 9,382 admissions to twenty-three sanatoria and three special tuberculosis wards of general hospitals, besides some to other institutions from which information was not obtained. An analysis has been made of 6,463 admissions and discharges.

Of these patients admitted, 5,850 (90·7 per cent) had pulmonary tuberculosis, and 47 per cent of these were bacillary positive; 41 (0·63 per cent) had tuberculosis other than pulmonary; 564 (8·7 per cent) were not considered tuberculous, and in 8 (0·12 per cent) there was no record of diagnosis. The pulmonary tuberculosis group was further classified as 9·3 per cent of doubtful evidence; 25·7 per cent as incipient; 40·2 per cent as moderately advanced and 24·7 per cent as far advanced cases.

DISCHARGED PATIENTS

Of the patients discharged, 111 (1·7 per cent) were not recorded; 559 (8·6 per cent) were considered not to be tuberculous, while 5,793 were tuberculous and classified as follows: disease arrested, 345 (5·9 per cent); apparently arrested, 1,265 (21·9 per cent); quiescent, 1,396 (24·1 per cent); improved, 1,654 (28·6 per cent); unimproved, 719 (12·4 per cent); died, 414 (7·1 per cent).

The non-tuberculous group, mostly with disorders of the respiratory tract, includes diseases which complicated diagnosis. Of the 343 cases classified, 4 were cured (0·9 per cent); in 14 (5·6 per cent) the disease was quiescent; in 293 (85·3 per cent) improved; in 27 (7·8 per cent) unimproved and 5 (1·3 per cent) died.

RELAPSES

Relapse was the cause of 1,042 (estimated) (11·2 per cent) of the 9,382 admissions, and relapsed cases numbered 731 (10·8 per cent) of the 6,771 discharged, and 177 (12·8 per cent) of 1,376 of those now under treatment. These patients help to raise the proportion of bacillary positive cases in the present patients to 54 per cent, as compared with 47 per cent in the discharged group. In the combined groups, 43·8 per cent were bacillary positive.

It is inevitable that the number of admissions for relapse, compared with direct admissions, will steadily increase and they, along with progressive long-treated cases, will ultimately form the large proportion of patients who must be kept under treatment.

Not all relapsed cases are readmitted, but the majority probably re-enter sanatoria. Comparable figures for civilian patients are not available.

The primary causes of relapse have been classified, but it should be recognized that several factors may be closely correlated and the cause not always fairly determined. They are as follows for a combined group of 7,550 discharged and present cases: Insufficient treatment, 49 per cent (424); misconduct, 13 per cent (110); intercurrent disease, 17 per cent (144); insufficient monetary compensation from the Government, 4 per cent (38); overwork, 13 per cent (113); unhygienic living and working conditions, 1 per cent (7); other causes, 3 per cent (29). In the group under treatment as compared with the discharged group, intercurrent disease, insufficient monetary compensation, and overwork, have increased relatively as causes of relapse, with proportionate decrease in the other groups. Insufficient treatment in the majority of instances has been due to the patients' unwillingness to remain in the sanatorium. Insubordination has been a cause of discharge in 2 per cent of the dischargees.

DURATION OF TREATMENT

The average length of treatment of discharged patients has been 5¼ months, the maximum average of one institution was 8½ months, and the minimum average 1½ months (in a reception and distribution hospital where only advanced cases were retained).

DURATION OF DISABILITY

A forecast of the future of the discharged patients has been made from data obtained from representative serial groups of 100 cases from each of fifteen sanatoria. The patients are classified in groups according to the degree and probable duration of their disability. This should prove for all kinds of cases to be temporary in 37 per cent (2,860 of 7,716 discharges); indefinite in 32 per cent (2,465); and permanent in 31 per cent (2,385), including 8 per cent (615) who died. The bacillary positive pulmonary cases (3,620) show naturally a less favourable outlook. Only 11 per cent of these are likely to be but temporarily disabled; 35 per cent will probably be indefinitely, and 54 per cent permanently, disabled, including 16 per cent who died.

PATIENTS STILL UNDER TREATMENT

The patients under treatment on April 30, 1920, were 1,791, on the strength of the department, and 1,530 of these were at the several sanatoria. The latter on analysis show up rather less favourably than do the patients discharged. The average duration of residence is already 18 days (12 per cent) longer, 2·4 per cent more are bacillary positive; relapsed cases are greater by 1·7 per cent and the forecast as to disablement is worse; 7 per cent of the temporary group having dropped into less favourable groups.

Of the 1,436 patients under treatment during the time of the board's visits 103 (7·2 per cent) were ex-officers, 24 (1·7 per cent) were ex-nursing sisters, and 1,309 (91·1 per cent) were ex-service men of other ranks. Of these also, 378 (26·3 per cent) were in the infirmary, 264 (18·4 per cent) were up, but restricted to a porch life, while 794 (55·3 per cent) were able to take varying amounts of exercise and to work in the occupational shops and schools. (Numbers were derived from percentages of 1,358 analysed.)

OVERSEAS GROUP VS. NOT-OVERSEAS GROUP

Seventy-seven per cent of patients treated for tuberculosis were men who had been overseas. An interesting comparison of results of treatment obtained in ex-service men who have been overseas, and those who did not leave Canada, is made possible by figures obtained from the department covering a period of 16 months; 3,218 cases of men in both categories have been classified as 73 per cent tuberculous; 3 per cent non-tuberculous; 6 per cent refractory (AWL 2 per cent and refused treatment 4 per cent); 18 per cent no record. Considering those classified as tuberculous (of whom 1,745 (75 per cent) were overseas men and 585 (25 per cent) not overseas), the following results of treatment are found: In proportion to 100 overseas cases in each instance, the disease in not-overseas cases was apparently arrested in 209, quiescent in 143, improved in 86, unimproved in 115, and 71 died. Similarly proportioned, the not-overseas non-tuberculous cases were 68, and the refractory cases 28. The less satisfactory results for the overseas group are due to four main causes: greater hardship and conditions which favoured advance of disease until recognized; interference with treatment because of travel and change of hospital or sanatorium; varied standards of medical control; restlessness with refractoriness to necessary regime, resulting from military life. The last-mentioned factor is shown by the relatively large number of refractory cases amongst the overseas group.

POISON GAS

The influence of poison gas as a factor in producing tuberculosis has been of concern to both the public and medical profession. The personal equation of the individual physician in determining whether or not gas has been a factor, and to what degree, in producing the present illness, even when supporting documentary evidence is forthcoming, must be recognized. The widely-varying proportions given by the medical officers of the cases classified at the various sanatoria suggest that bias in clinical judgment is unavoidable. During the latter half of the war, nearly all soldiers in the field are said to have been exposed in some degree to different kinds of gas. Exposure to gas enters, therefore, into the clinical histories of a large number of cases. The composite opinion of the medical officers who have analysed 7,551 histories of illness show that in 445 instances (5·9 per cent) gas exposure bears some relation to the present illness. In only 24·5 per cent of these was documentary evidence produced (although it may have existed for a much greater number). Of these gas-factor cases, 386 (5·1 per cent of the total group) had tuberculosis, either bacillary positive or clinical, and 58 (0·8 per cent) were not tuberculous. In only one-quarter of the tuberculous group, and in one-fifth of the non-tuberculous group,

was there supporting documentary evidence. Amongst the 328 patients individually examined by members of the board only an occasional patient was seen in whom gas could be considered a determining factor in illness.

Consultations on Patients Under Treatment

At twenty-four of the institutions visited, the board made a detailed examination of 328 patients, while many more were seen more casually in consultation with the several superintendents, especially in regard to prolonging or terminating treatment. Rarely did the examination add to information concerning, for the most part, well-worked-over cases. Very few patients could be considered as kept unduly long for their physical needs, and the welfare of the patient was found to be justly considered when termination or prolongation of treatment had been decided upon. The experience of civilian sanatoria is that the vast majority of patients are treated for too brief a time. The 49 per cent of relapses due to insufficient treatment, already referred to, further emphasizes this point. The more prolonged average period of treatment of present patients of nearly six months, with a year as the average period in one small institution, is evidence in part of practical appreciation of this lesson by medical superintendents, and further evidence that relapsed cases require proportionately longer treatment.

difficulties in diagnosis

The war, with its aftermath of chronic respiratory infections amongst ex-service men, requires of the sanatorium physician a more accurate differentiation of pulmonary diseases than formerly obtained. The safe and easy course before the war was to regard an indefinite lung affection as tuberculosis unless there was strong evidence to the contrary. The recognition to-day of various chronic respiratory infections impairing health, suggestive but not typical of tuberculosis, introduces a very great difficulty in appreciating fairly the condition of a patient in whom there is reason also to suspect a present or past tuberculous affection. The physician may use all modern means of diagnosis for his suspect cases, and still have reason to doubt the rightness of his conclusions, although for pension requirements he must make a decision. Doubtful and non-tuberculous cases formed 17 per cent of all admissions of D.S.C.R. patients. A number of sanatorium physicians were at a loss in placing these patients, although all facilities for intensive differential diagnosis were at hand. Sometimes they were confused because of the point of view of consultants and of the Pensions Board examiners, especially in regard to patients manifesting a latent clinical tuberculosis, but with a complicating affection. It would be helpful if standards of diagnosis were formulated which, while demanding a minimum of research, would compel accurate deductions before reaching a diagnosis. A class for cases of doubtful evidence, while needed, is a temptation to inaccurate diagnosis. The classifications used for sanatorium purposes, carefully defined, but necessarily arbitrary, have distinct limitations which have been severely strained by these recently-added difficulties in diagnosis. The necessity of some modification is obvious, which will include, but still differentiate, those cases here designated as having latent clinical tuberculosis. This type of case peculiarly complicates the classification of degree of disease and the result of treatment in sanatoria. The patient gives evidence of a past tuberculosis, which is confirmed by X-ray examination, but the disease may be quite arrested, cause no symptoms, and bear no relation to the present illness from which the patient suffers. Nevertheless, it cannot be disregarded as a possible factor in the present illness until a period of observation by a competent observer has made possible a decision in regard to its neutrality. Such cases, of which there are many admitted to sanatoria, should not properly be classified amongst the actively tuberculous, nor should the sanatorium be credited for effecting an arrest of an inactive and probably healed condition not responsible for the illness of the patient. This board has taken the opportunity afforded by collecting statistical material, of attempting to modify existing classification in order that the latent clinical group may be differentiated.

The Distribution of Patients in Sanatoria

RATE OF ADMISSIONS AND DISCHARGES

The rate of admissions to sanatoria has continued to rise even for the first third of this year. Discharges, however, have increased so steadily that they promise to exceed the admissions this year, and the peak has, therefore, been passed. The number of admissions to sanatoria is materially in excess of the actual number of individuals treated, as are also the discharges because of transfers from one institution to another, and of the readmission of relapsed cases.

REDUCTION OF BED CAPACITY

On April 30, 1920, there were 2,227 D.S.C.R. beds in twenty-seven sanatoria and hospital tuberculosis wards. This number of beds is 68 per cent of the total capacity of these institutions. Ten of the sanatoria were operated by the department, and, in two others under the department, provincial patients were also taken. Bowness Sanatorium, Alberta, of the latter type, was still under construction. Four provincial and ten civilian institutions also undertook the treatment of D.S.C.R. patients. The four western provinces contained 687 of the total D.S.C.R. beds; the two central provinces 1,175, and the maritime provinces 365. At this time 1,791 patients were under treatment for tuberculosis by the department and 1,530 of these were in sanatoria. Three months later, the patients under treatment in sanatoria had been reduced to 1,396, leaving a surplus of 831 beds in the several provinces. The closing of nine institutions: four in the western, four in the central, and one in the Maritime provinces, under consideration by the department, was recommended, with due consideration to be given to the least possible separation of patients, especially those in the infirmaries, from the vicinity of their homes. Eight of these nine sanatoria are operated solely by the department. Six of the nine institutions: three in Alberta, two in Ontario, and one in Quebec, had been developed as temporary measures to meet urgent needs, and their temporary character had necessarily prevented development to the standards of efficiency of the larger permanent institutions. Three more permanent institutions: Balfour Sanatorium, B.C., Lake Edward Sanatorium, P.Q., and Dalton, P.E.I., could no longer be considered necessary for D.S.C.R. needs in these provinces, and closure of them was also advised at as early a date as could be arranged.* The provincial authorities have been approached with reference to the use of two of these for civilian patients. The completion of Bowness Sanatorium, Alberta, will alone make possible the closure of four smaller institutions; three in Alberta, and one in British Columbia. Eighteen institutions will then remain for the treatment of the tuberculous ex-service man. Five will be operated by the department, and, in three of these, provincial patients will also be taken. Thus 607 beds in all will be eliminated (27 per cent of D.S.C.R. beds) but the 1,620 remaining beds, an excess of 16 per cent over those now filled, can, in case of need, be supplemented by 177 reserve beds at the eighteen remaining institutions, making an excess of 28 per cent over present requirements. These reserve beds, however, are not all available without some internal readjustments in the sanatoria.

PATIENTS OUTSIDE THEIR OWN PROVINCE

Surprisingly few patients were found in provinces other than their home province or province of future residence. Of 1,461 D.S.C.R. patients in residence at the sanatoria during the summer (61 per cent of the total sanatorium patients), only 100 (7 per cent of the total D.S.C.R. patients) were outside their own province, and,

* These sanatoria have been closed.

dispersed amongst the several provinces, there were 149 patients (10 per cent of the total D.S.C.R. patients) from countries other than Canada. The percentage of extra-provincial patients in relation to the total D.S.C.R. tuberculous patients under treatment in each province was as follows: British Columbia, 27 per cent; Alberta, 32 per cent; Saskatchewan, 27 per cent; Manitoba, 12 per cent; Ontario, 14 per cent; Quebec, 24 per cent; New Brunswick, 11 per cent; Nova Scotia, 8 per cent; Prince Edward Island, 0 per cent.

TRANSFER OF PATIENTS

In order to effect this reduction in the number of institutions, 408 patients must be transferred to other sanatoria. Following the reduction, all provinces, excepting British Columbia, Ontario and Prince Edward Island, will have a large number of beds for D.S.C.R. patients, varying from 22 per cent to 93 per cent, in excess of the patients belonging to their respective provinces. British Columbia will be 23 per cent and Ontario 15 per cent short, and Prince Edward Island will have no S.C.R. accommodation. Institutions other than sanatoria in these provinces (e.g., the Vancouver General Hospital) can accommodate some of the excess, while part must necessarily continue in or be transferred to other provinces.

The benefit to be derived from being placed in more efficient and more pleasantly situated sanatoria, should, on the whole, more than offset the slight inconvenience some few patients must necessarily undergo through removal from the near neighbourhood of their homes. At the same time, a material economy will be effected by the department in the reduction of local overhead expense of sanatorium administration.

The Treatment of the Tuberculous Ex-Service Man

THE SANATORIUM SITUATION IN CANADA BEFORE AND SINCE THE WAR

Housing, Service, Medical care and Discipline.—The anti-tuberculosis campaign in Canada had, by 1915, brought about the erection of 32 sanatoria and other institutions in eight provinces, with a total of 1,840 beds, one bed for every 4,400 inhabitants, with which to treat tuberculosis. Yearly deaths were 8,584, and 42,800 people, (five times the death-rate), a low estimate, were requiring treatment. In 1916, the Government recognized the need of the rapid expansion of existing institutions, and the speedy construction of new sanatoria, in order to care for the inevitable breakdowns from tuberculosis amongst the forces both at home and overseas. As the result of Federal initiative, exerted through the Military Hospitals Commission and the Department of Soldiers' Civil Re-Establishment, and through grants to aid provincial and municipal enterprise, the accommodation for patients had more than doubled by the end of 1919. There were then 3,860 beds in 38 institutions well distributed amongst the nine provinces, one bed for every 2,300 inhabitants. Some of this additional accommodation had been improvised at time of need, but, this year, sanatoria undergoing expansion, or being newly built, have been completed and can replace some of these improvisations. Reservation of 58 per cent of the total accommodation in Canada has been made for ex-service men, or 68 per cent (2,227 beds) of the capacity of the 27 institutions in which the department's patients are being, or, until recently, have been treated. In these institutions, 1,461 beds, or 66 per cent of the department's reservation, are filled, while 91 per cent of the remaining civilian beds are occupied. The civilian population has 597 additional beds in other institutions, a total of 1,633 beds in all.

CIVILIAN HARDSHIP

With the rapid influx of patients from the C.E.F., 2,204 in 1918, and 3,354 in 1919, 24 per cent and 36 per cent respectively of the total (9,382) admissions to April 30, 1920, the civilian population requiring treatment underwent considerable hardship. There had been but little sanatorium development by civilian enterprise since 1914, and a large proportion of the already limited bed accommodation was reserved for the returning soldiers until time had been given for the completion of the necessary construction being undertaken by and with the aid of the Government.

INCREASED EFFICIENCY

While the actual rate of incidence in ex-service men has been estimated to be double that in a comparable civilian population (estimated for 1915), the ex-service man must be treated, while the civilian far too often is not. Moreover, during the years of the war there has been an appreciable rise in the civilian rate. One of the real benefits of the war, therefore, is the great increase in sanatorium capacity because of the participation of the Federal Government. Not only has the accommodation been more than doubled, but all institutions which have enjoyed Federal assistance are much more highly efficient, because of improved equipment, as well as enlargement. This increase in capacity and efficiency could scarcely have been attained in a decade or more under the ordinary conditions of peace without this assistance. Because of war and its results a much longer period would have been required.

Sanatoria have, in Canada, had a hard struggle to become efficient, since the compelling need of expansion for the many who demanded admittance had hitherto restrained improvement of facilities and equipment needed, especially for the development of high standards of diagnosis. In the fifteen sanatoria which the department will continue to operate or co-operate with, after the contemplated closure of nine other institutions has shortly been effected, there are to-day, besides the usual essentials for medical work, good clinical laboratories in all, and also fourteen highly-efficient X-ray installations. Two tuberculosis wards, of three in connection with one special and two general hospitals, in which the department's patients will also be treated, have similar facilities. In eleven of the present sanatoria, the X-ray plants have been directly or indirectly the result of the department's action. In four of the nine institutions to be closed, there have also been X-ray installations. The laboratories in five of the sanatoria have been entirely developed or materially assisted by the department. Comparatively few additions to medical equipment will make all institutions thoroughly well found. The provision of good working facilities is of itself an incentive to a high order of work.

SPECIAL CONSTRUCTION

More than seventy buildings in all have been erected through Government aid, to serve various purposes, apart from enlargement of existing buildings.

Ten special infirmaries of admirable design and construction, of 50 to 100-bed capacity, have been built entirely, or partly, by the department, and modifications of four other sanatoria for infirmary space have been made. In some respects, the result might have been even better from a medical standpoint if expert advice had been more fully used. In eleven of thirteen other institutions, suitable infirmary accommodation existed. Nine elevators were installed in the infirmaries having more than two floors. Elevators had been originally included in one other sanatorium and in four wards, divisions of larger hospitals. In the institutions treating D.S.C.R. patients, 35 per cent of the department's accommodation is infirmary.

The accommodation for ambulant patients is mainly of the pavilion type, the pavilions being subdivided into wards with porch space, each for eight to ten patients, and with central dressing rooms, lavatories and sitting-rooms. These are mostly of frame, or frame and stucco construction, and have proved to be practical. Most are much better built and finished than the original lean-to type of building, of which they are a further development. Thirty-six of these pavilions have been built.

Service buildings for dining-rooms, kitchens, and female employees have been especially built by the department for five sanatoria, and great enlargement of existing plant was made in five others. In seven sanatoria, cafeteria facilities have been especially provided. Opportunity has also been provided for recreation, entertainment, moving pictures, theatricals, etc., and canteens, in ten sanatoria by special new buildings, separate or combined with service or vocational buildings. Special provision has also been made for occupational therapy and vocational instruction in eleven sanatoria. In the remaining institutions fair, but occasionally inadequate, facilities already existed; in 17, for recreational, and in 16, for vocational needs.

Six of the sixteen central power and heating plants, and four laundries have been built by the department. These were well-appointed and highly efficient. Administrative and medical rooms in most instances were sufficient, but because of necessary compromise were occasionally not well placed nor large enough for efficient service. One new large administration building was built.

Staff quarters in many of the sanatoria have not been developed proportionately to other enlargements. The nurses' quarters in six sanatoria are in separate, entirely suitable buildings (five of which are due to the department), and in eleven others fairly adequate accommodation is found in administration buildings, but in eight sanatoria the nurses' quarters were crowded, sometimes unpleasantly near patients, and suitable living-rooms were lacking.

Sufficient provision for the men of the upper staff was lacking in seven sanatoria, and in one large sanatorium there were no quarters for a married medical superintendent. In the larger sanatoria, often in isolated situations, provision should be made for a married assistant physician as well as a superintendent. A better selection and longer service would thus be assured. Three residences for superintendents have been built.

For male and female employees of the lower staff, the quarters were inadequate in seven sanatoria.

WELL-BALANCED INSTITUTIONS ESSENTIAL FOR EFFICIENCY

Owing to the enlargement of sanatoria, originally well proportioned, the balance in numbers between patients and staff on the one hand, and the relation of personal to general living quarters on the other, have been disturbed and not yet restored in a number of instances.

Sanatoria of considerable size and relatively isolated should be self-contained and well-proportioned in regard to quarters for both patients and staff, and for both, because of social restrictions, adequate living and recreational rooms are necessary. Where the institutions were ill-balanced, it was evident that, with both patients and staff, discontent prevailed in proportion to their inconveniences, and that esprit de corps was seriously impaired.

LOCATION

The locations of ten sanatoria in eight provinces had been chosen especially for climatic advantages and their sites are also all placed in beautiful surroundings. The locations of fifteen had been due to expediency, but the sites of seven of these are also in charming country. The results noted in the various institutions further emphasize the accepted opinion that climate is but rarely essential for the welfare of a patient, but that medical supervision, disciplined treatment, and suitable living opportunities are all-important. Five of the sanatoria are much isolated, but, if the institution is sufficiently self-contained, this is mainly of importance because sometimes it is difficult of access. From the point of view of treatment these isolated institutions are much more fortunate than are five other sanatoria, all in Ontario, situated near large centres, where there is the constant temptation to the ex-service man to commit breaches of discipline to his own detriment.

Fine institutions are not essential to happiness, since, in two improvised buildings, contentment and cheerfulness prevailed and the opportunities for treatment were good. This was in part due to the fact that single or double rooms permitted a degree of privacy not to be found in the larger well-built pavilions of ward type.

EQUIPMENT

The furnishings and equipment in general were suitable to the several institutions. In many sanatoria, the kitchens were finely equipped with all desirable modern conveniences.

SERVICE

The medical service of most sanatoria was relatively under-staffed. This is partly due to the difficulty of obtaining physicians experienced in, or interested in, tuberculosis, and to the fact that medical men choosing tuberculosis work are largely recruited from those who themselves have had the disease. Technical assistants helped to make good the deficiency. Some arrangements for dental service existed in all the institutions.

The nursing service in all institutions was fully adequate to the needs of both the department's patients and the civilian patients as well.

The food, which is under the supervision of dietitians at eighteen sanatoria, was satisfactory in quality and preparation in all. Meals were taken with the patients in all institutions except four, where there were no general dining-rooms.

The cafeteria service in seven sanatoria was of variable efficiency. It is necessary no doubt in certain localities where service difficulties are great, and it effects some economy. Nevertheless, apart from the manner of presentation of food as compared with a dining-room service of the ordinary kind, there is a distinct loss of morale from such a service, that is unfortunate. Meals are social events and patients prepare for them and behave accordingly. Under the self-serve system, the function of the dining-room in maintaining sanatorium morale is largely lost.

The average number of staff required to serve these institutions was 55 per cent of the number of patients. In four of the larger institutions, all highly efficient, the staff ranged from 34 to 45 per cent. The smaller institutions, and those with many vacant beds, naturally had a higher ratio, the maximum being 85 per cent. A fair idea of the relative efficiency of the institutions from the point of view of service is difficult to estimate because of several variable factors, viz., the number and the condition of patients; the rate of turnover of patients; the number and the quality of staff personnel; the standards of work maintained; and the institutional facilities. Impressions only could be formed, and the general service was thought to be satisfactory in twenty-two of the twenty-six institutions visited.

The volume of work of these institutions is suggested by the fact that the million and a half hospital-days that D.S.C.R. patients have been treated are equivalent to more than forty-one centuries of treatment for one patient.

CHARACTER OF MEDICAL WORK

The medical work in the twenty-six institutions varied in quality. Four of these institutions were tuberculosis wards attached to hospitals with no resident physician especially devoted to tuberculosis, and these cannot be considered as sanatoria. The thirty-one patients in them were well cared for, but the kind of work possible here can scarcely be compared with sanatorium standards.

Of the twenty-two sanatoria proper, your board found the medical work less than good in four (treating 193 patients, 13 per cent of total of those under treatment and 47 per cent of 408 who are to be transferred); good in twelve and high in

six. With nine institutions closed in the near future, requiring the transfer of 408 patients, the rating for the remaining fifteen sanatoria will be good in nine and high in six. Other institutions not classified are three tuberculosis wards attached to hospitals. (Central Alberta Sanatorium, opened since inspection, is included in the number now operating.)

MEDICAL RECORDS

The records were kept in a manner comparable with the above rating. The various kinds of record forms reflected the ideas of the different superintendents, past and present, aside from the department's forms used in ten institutions. It is considered best that superintendents should develop forms suitable to their individual methods of work. Where individual sanatorium forms are used, those might well be supplemented by a sheet calling for special data for the department's purposes.* The standardization of statistical data is highly desirable, and it would be helpful if the various institutions might be advised regarding uniformity of compilation by a statistician familiar with the requirements of this special field. The recent inquiry by the board has revealed the confusing methods which now exist in compiling the statistical data, so important to a fair realization of the tuberculosis problem as regards ex-service men, and also of civilians. Discrepancies are very numerous, and fair comparison is difficult.

MEDICAL STANDARDS

The establishment of standards of differential diagnosis insisting upon the minimal diagnostic work necessary to bring about more uniform grading of difficult cases; the enlargement of the standard classification for grading cases and results of treatment to meet present difficulties; and the devising of uniform methods of recording ultimate statistical data, might well be initiated by the department for its own convenience, and for the benefit of civilian work as well. The results of uniformity would show in the annual reports of institutions to the advantage of all. Annual statistical reports from individual sanatoria operated by the department should be required. Uniformity of standards thus brought about might possibly result in the ultimate adoption by all sanatoria of the best devised record forms, with resulting uniformity of records.

METHODS OF TREATMENT

The methods of treatment in vogue comprise all generally accepted as sound at the present time. A maximum of out-of-door life through the facilities provided; adequate nursing; an ample dietary; food and diets supervised by trained dietitians; regulated rest and exercise; artificial pneumothorax; tuberculin (occasional); heliotherapy, both natural and artificial; dental; and occupational. Lectures, often illustrated, are given at more or less regular intervals in most institutions, and, in some, health bulletins and sanatoria papers are used for further instruction. These supplement printed instructions.

MEDICAL RESEARCH

Research unfortunately has little place in Canadian sanatoria. During the recent years of war, pressure has been felt in all, resulting from the larger volume of work due to increasing numbers of ex-service men, and the inconveniences and responsibilities arising from the new construction and modifications which have taken place in

* This form has been supplied.

eighteen of the sanatoria. Some working-up of clinical material has been accomplished, and a number of useful and occasionally excellent papers have been published. Every encouragement should be given to this kind of work by supplying sufficient assistance for the considerable labour required. Laboratory and experimental research also need encouragement, as in this field nothing has been done. Institutions as a whole, and patients and physicians alike, benefit greatly where all such researches are carried on.

SPECIAL CLINIC

The department's clinic at the Toronto General Hospital requires mention apart from sanatoria. This active centre of clinical work is intimately co-ordinated with the Connaught Research Laboratories. Serological studies, tuberculin tests, protein sensitization tests, and excellent X-ray work are all combined with the intensive clinical study of cases at this clinic. It is of great value not only to the patients in the unit, supervised by the department, but also to the physicians of the unit and to the examiners of the Board of Pension Commissioners. Similar clinics, where need and opportunities somewhat comparable exist, might well be established in the interest of the department's patients, as for example: The development of the Rotary Clinic at Vancouver; of the Royal Edward Institute at Montreal; and of the St. John County Tuberculosis Hospital at St. John; and possibly in other centres.

ORGANIZATION

The organization of sanatoria should properly be self-contained. The medical superintendent should be in complete charge and all officials accountable to him. He should be the sole channel of communication with the governing board whether that board is civilian or departmental. There should be no functional control from outside the sanatorium.* At all points where previous experience shows the need of functional foremen, so to speak, in institutional administration, these officials should be continued, or suitably replaced if withdrawn because of proposed changes in organization, but placed definitely under the superintendent's control. For economic reasons and to enlarge interest in management, monthly or quarterly statements of itemized costs, of per capita costs, and of costs of segregated services, should be forwarded to the superintendent when accounting is carried on outside the sanatorium. An interchange of standardized financial reports amongst the various institutions would also be helpful and stimulating.†

ATMOSPHERE AND DISCIPLINE

Impressions regarding the general atmosphere and discipline were obtained from the several meetings held with both patients and staff at each institution. At each meeting, all were invited to make, without prejudice to themselves, any complaints or suggestions they had in mind.

The atmosphere and discipline of the institutions are generally interdependent, and the result of several factors, viz: the nearness to large centres; the traditions and control established in the past; the personality of the superintendent, and to a less extent, his staff; the efficiency of the medical work; the support given the superintendents by department officials outside the institutions; and the sufficiency and proportion of the various buildings and facilities of the sanatorium. The atmo-

* The chain of responsibility in hospitals has been re-organized since inspection by this Board; the several recommendations made have been incorporated in the new scheme of organization.

†Individual critiques regarding institutional costs, with comparison of such costs in other institutions, are forwarded at end of each month to Unit Medical Directors for distribution.

sphere was, on the whole, one of cheerfulness and appreciation in all but six institutions. In one of these there was nothing wrong, and, in another, circumstances difficult of correction were at fault. In the former, a spirit of resentment had developed amongst some few patients against the restrictions which a new and efficient superintendent enforced in the general interest of the patients. Nearness to a city, with immediate proximity to an amusement park, and previous laxness in regard to leave had combined to create a spirit of freedom from restraint difficult to control. In the latter, the considerable distance from a small town with few opportunities for transportation, along with relatively limited facilities for recreation and amusement at the sanatorium for the number of patients, combined to cause irritation.

Inadequate medical supervision was responsible for an atmosphere of depression and some complaints in two small improvised institutions, otherwise comfortable and fairly satisfactory.

Lax administration and medical supervision, along with a rather overcrowded building, faulty in several details, offered good reason in a fifth institution for complaints, although on the whole the patients were cheerful.

In a sixth, the improvised building, structurally unsuitable for its purpose, gave reasonable grounds for much dissatisfaction. The association also with a convalescent group of patients treated in the same institution, who were not tuberculous, and who were allowed a degree of liberty greater than would be proper for tuberculous patients, invited breaches of discipline, the control of which caused resentment.*

COMPLAINTS

There were only 132 institutional complaints from amongst the 1,530 patients in twenty-four institutions. From fourteen sanatoria, there were none whatever which referred to the institutions. From eight sanatoria there were 37 (28 per cent), and from two, 95 (72 per cent). These last two have already been closed. Other complaints referred to departmental and pension matters. As a rule when some reason for complaint existed it was reiterated several times, thus increasing the number of complaints, and, in a number of instances, the complaints listed were not entirely justified.

DISCIPLINARY DIFFICULTIES

Disciplinary difficulties are less frequent now than during the earlier years when military life was nearer. While relatively few in number they are, however, more or less general wherever any considerable number of ex-service men are in residence, and their frequency depends largely upon environment. Some sanatoria were unfortunately too accessible to towns. Sanatoria at a considerable distance from a centre of population, and well beyond easy walking distance from a town, are more fortunate. Then the visiting of friends is limited, and cost of travel stands in the way of applications for leave. Leave in a sanatorium is not to be demanded as a matter of right since it seriously interferes with treatment, but should be for cause only. The right idea in regard to the treatment of tuberculosis, which is all important (to the patient), is probably more easily obtained and sustained in those sanatoria which also treat civilians, than in those treating only ex-service men. Moreover, the civilians indirectly influence the point of view of the ex-service men in other matters, and help to link them again to civilian conditions, and the problems which lie before them after discharge. It is quite natural that ex-service men in general should have proved less amenable to the restrictions of sanatorium life than civilians, although identical methods are required to obtain the best results. A majority conform quite as well as the average, and some even as well as the best, of civilian patients, but that a minority are decidedly more difficult to treat has been the experience of all sanatorium

physicians. Discipline in relation to treatment is all important, and infringement of it the greatest handicap to the individual patient, and to the patient body as a whole. A definite line should be drawn in regard to infringements of discipline; trespassing beyond this by a patient should constitute refusal to take treatment, followed by withdrawal of support and cessation of responsibility by the department.

CONCLUSION

The sanatoria for the treatment of tuberculous ex-service men, recently inspected, were, on the whole, with four exceptions, highly efficient. These four institutions were of a temporary nature, improvised at a time of need when other facilities were not available. Two of the four, in the west, were difficult to provide with physicians experienced in treating tuberculosis. These four have now been closed, and five others have been or will also be discontinued by the department, two of which will revert to civilian use. The remaining fifteen sanatoria are of high standard, and under the direction of men experienced in the diagnosis and treatment of tuberculosis and other pulmonary affections. The three tuberculosis wards are good, but in a different class. Canadians may feel assured that their fellow-countrymen who have given war service and are now tuberculous, are being cared for by physicians competent and experienced, and in special institutions developed for their needs, of which the country may well be proud.

Upon the completion of a most interesting and instructive tour of the sanatoria in Canada under the control of, or working in co-operation with, the Department of Soldiers' Civil Re-Establishment, this board was entirely of the opinion that a great constructive work had been done by the Government of Canada on behalf of her tuberculous ex-service men, in a broad and sympathetic manner. Not only assistance, but also a real and needed stimulus, has been given to the whole anti-tuberculosis work in Canada.

THE CARE OF THE TUBERCULOUS EX-SERVICE MAN AFTER DISCHARGE FROM SANATORIUM

FOLLOW-UP, AFTER-CARE, EMPLOYMENT, RE-ESTABLISHMENT

The report of the board on the after-care of tuberculous ex-service men is very comprehensive, and will be of the greatest value to all persons interested in this subject. The following brief summary does not do justice to the full report, which will be published in due course.

PUBLIC INTEREST

The general subject of after-care of the tuberculous is a matter of public interest, as well as one of great importance to the individual concerned, and to his immediate relatives. Amongst anti-tuberculosis workers to-day, it is generally regarded as the weak link in the chain of effort that is being made to help successfully those who have broken down with tuberculosis. The problems for civilian and ex-service men are alike, but the latter is in a better position pecuniarily because of government assistance, while the former, as a rule, has a greater incentive to get, and remain, well, because of the lack of such assistance.

THE DANGER OF RELAPSE

The benefit derived from sanatorium treatment will, with a majority of patients, be lost unless measures are promptly taken upon the termination of such treatment to secure the best possible conditions for the individual in both home environment and work. The relapsing character of tuberculosis persists even after sanatorium treatment, which is not an end, but only a beginning of the care necessary for the affected individual to practice throughout his life, if he expects to maintain health. The

danger period is immediately on leaving the sanatorium because of the difficulties of readjustment of the convalescent to ordinary living conditions. This immediate danger for the ex-service man has been partly met by the full pension allowed in all cases for a limited period.* The danger period is prolonged for the man who again undertakes employment since this is liable often to be beyond his physical capacity. He must always maintain a physical reserve, and be able to repair physical expenditure by adequate rest taken in an efficient manner. Sanatorium treatment affords a relative cure only. Relapses, often irreparable, are certain for many patients who may have obtained satisfactory results from treatment, and increase in number until the fourth year after sanatorium treatment has been completed. After this period they subside, through the survival of the fittest, until by the seventh year the death rate for these cases has approached the normal. The figures already given show that relapses amongst ex-service men are increasing in numbers, and it is inevitable that this should be the case.

FOLLOW-UP SOCIAL SERVICE

Of immediate importance, in order to reduce relapse to a minimum, is the operation of an adequate "follow-up system" by nurses specially qualified for the work. This social service should enable department officials to have accurate information about the living and ultimate working conditions of the patient; competent advice can be immediately given by the nurse; more or less intensive, competent medical supervision can be arranged for the patient's need, and he will feel a sustained interest in his welfare. In a number of units, the board found this service already in effective operation, but much can yet be done to make it more effective, and especially to link it up with the sanatorium wherein exists the greatest knowledge of the individual case.

MEDICAL SUPERVISION

The desire on the part of patients that they continue under the supervision and direction of the sanatorium physicians by whom they have been treated can be well understood. It would be quite impossible, however, in many instances. An arrangement for a considerable number might possibly be made, whereby some sanatorium, if not the one in which the patient was originally treated, should be the centre to which he would be referred for advice. It must, however, be recognized that the responsibility of sanatorium physicians is to the present rather than to the past patients, and this extra tax upon the time of the staffs would have to be met by providing necessary assistance. To recommend the sanatorium control of all discharged patients would be a counsel of perfection quite impracticable as a general principle. The establishment of special clinics, or the appointment of specially-qualified medical advisers at convenient points, is desirable, but, unfortunately, since at all desirable points there are not enough physicians especially trained in the supervision of the tuberculous, the best possible compromise with existing conditions must suffice for many.

FINANCIAL ASSISTANCE

Essential to successful after-care is financial aid from some Government source, adequate and maintained, according to the reasonable need of the individual, to compensate him for his relative loss of earning power. Where this loss is complete, extra compensation is suggested, proportioned to the degree of illness and need of care as in other cases of extreme disability, when the patient is not treated in an insti-

* On discharge from sanatorium, 100 per cent pension is granted for tuberculosis disability wholly due to service; 90 per cent for tuberculosis disability aggravated by service.

tution. Help in the form of both prompt advice and pecuniary assistance from some special bureau should be forthcoming where necessary, in order to make safe living conditions for both the patient, and in the case of a married man, his family.

EMPLOYMENT

From a therapeutic, economic, and moral standpoint, the situation of every tuberculous ex-service man who has satisfactorily completed a course of sanatorium treatment, and who is neither totally disabled nor in need of absolute rest, demands that he engage in some form of employment. The form of employment engaged in should be approved by the medical supervisor whenever possible.

BUREAUS OF INFORMATION

Bureaus of information for bringing the man and opportunity together, in the interest of the tuberculous especially, are desirable.

SHELTERED EMPLOYMENT

Since favourable opportunities for work in the ordinary labour market exist for only a limited number of tuberculous ex-service patients, it is desirable that certain kinds of sheltered employment be created in localities where they would be justified by a sufficient number of men who would engage in them. These enterprises should be developed cautiously at first as experiments at the centres which promise most success. While it is improbable that they can be justified on economic grounds, they are fully justified for therapeutic and moral reasons. The kind of employment devised for any locality should be that best suited for the inclination and training of the majority of patients in that locality. Inquiry was made by the board at all sanatoria visited concerning the desires of the men in regard to employment, and it was apparent that apathy at some points only required a lead to be transformed into interest and energy. In some sanatoria, most encouraging opinions were expressed by the men regarding the desirability of establishing limited industries in their behalf, with the assurance of their co-operation in case such opportunities were realized. Indeed, at one institution, where the subject has been given much consideration, a practical plan of co-operation has been developed, for the materialization of which, steps have already been taken. Some governmental subsidy is anticipated, as well as help from private individuals.

GROUP ENTERPRISES

Where suitable patients have not the opportunity to co-operate in substandard shop or colony, certain small group enterprises might well be helped in fruit-farming, poultry-raising, and kindred occupations in suitable localities.

INDIVIDUAL ASSISTANCE

Again, where the patient must work apart from his fellows, assistance in individual instances, where warranted, should be considered.

NUMBER OF EX-SERVICE MEN SUITABLE FOR EMPLOYMENT

In order to estimate the practicability of developing forms of sheltered employment, the board asked for the opinion of the several medical superintendents about the probable disability of groups of patients, sufficiently large in number to be representative of all patients who have come under treatment. While there is room for inaccuracy, no

other means short of an extensive individual survey could give comparable information, and the figures obtained may fairly be considered to be reasonable estimates of the future possibilities of the tuberculous ex-service man. These have already been given in the statistical summary. It is believed that 70 per cent of the two higher groups (in which disability is defined as "temporary" and "indefinite"), amounting approximately to 4,000 men, would engage in occupation, in some degree, if suitable work could be found. These men are distributed in the different provinces approximately as follows: British Columbia, 384; Alberta, 268; Saskatchewan, 306; Manitoba, 335; Ontario, 1,647; Quebec, 616; New Brunswick, 141; Nova Scotia and Prince Edward Island, 444.

CANADA'S DIFFICULTY

Standard enterprises, obviously, would not be warranted for all the provinces, since the number of ex-service men in some of them is relatively small. Canada, with its population spread over a strip of territory 4,000 miles in length by 400 in breadth, is topographically in a far different position from Great Britain and the United States for meeting the needs of the tuberculous ex-service man at all points, as regards the provision of opportunity for employment. In both of these countries there are concentrated populations with large numbers of tuberculous ex-service men to keep up the supply for workshops and colonies. In Great Britain, plans for the employment of the tuberculous have been put into operation, which give the suggestion for similar plans in Canada. All such plans are as yet considered by their advocates to be in the experimental stage, but it is time for Canada to undertake her own experiments to meet a very real need.

COMMENT

From the observations made while on the recent survey of Canadian tuberculous ex-service men, and from a review of the wide literature published relating to the after-care and employment for the tuberculous, the board has prepared a full report on these subjects, in which a number of suggestions and recommendations are made, too detailed and too controversial to discuss here.

INSTITUTIONS OPERATED BY THE SOLDIERS' CIVIL RE-ESTABLISHMENT

GENERAL TREATMENT HOSPITALS.

Unit.	Name.	Place.	Total No. of Patient Beds.
"A"	Ste. Anne's Hospital (General)	Ste. Anne de Bellevue, P.Q.	460
"B"	Camp Hill Hospital	Halifax, N.S.	300
"C"	Sydenham Hospital	Kingston, Ont.	266
	Sir Sandford Fleming Hospita	Ottawa, Ont.	74
"D"	Euclid Hall Hospital	Toronto, Ont.	40
	Davisville Hospital	"	450
	Christie Street Hospital	"	600
	Brant House	Burlington, Ont.	400
	Hut Hospital	Hamilton, Ont.	20
"F"	Erie Hospital	London, Ont.	67
"G"	Deer Lodge Hospital	Winnipeg, Man.	64
"H"	Earl Grey Hospital	Regina, Sask.	81
"I"	Strathcona Hospital	Edmonton South, Alta.	148
	Sunnyside Hospital	Calgary, Alta.	42
	Col. Belcher Hospital	"	135
"J"	Victoria Hospital	Victoria, B.C.	110
	Shaughnessy Hospital	Vancouver, B.C.	300
	Esquimalt Hospital	Victoria, B.C.	136
"K"	Lancaster Hospital	St. John, N.B.	70
	Fredericton Hospital	Fredericton, N.B.	125

TUBERCULOSIS SANATORIA.

Unit	Name	Place	Total No. of Patient Beds
"A"	Ste. Agathe Sanatoria	Ste. Agathe des Monts, P.Q.	266
"C"	Mowat Memorial Sanatorium	Kingston, Ont.	162
"I"	Central Alberta Sanatorium	Bowness, Alta.	100
"K"	Jordan Memorial Sanatorium	River Glade, N.B.	78

NEURO-PSYCHIATRIC HOSPITALS.

"F"	Westminster Hospital	London, Ont.	450
"A"	Ste. Anne's Hospital	Ste. Anne de Bellevue, P.Q.	300

INSTITUTIONS, OTHER THAN SOLDIERS' CIVIL RE-ESTABLISHMENT, WHERE DEPARTMENT HAS DEFINITE ARRANGEMENTS FOR ACCOMMODATION

I. GENERAL TREATMENT HOSPITALS

Sydney Hospital	Sydney, C.B.
General Hospital	Charlottetown, P.E.I.
Montreal General Hospital	Montreal, P.Q.
Royal Victoria Hospital	" "
Jeffrey Hale Hospital	Quebec, P.Q.
Hotel Dieu Hospital	Kingston, Ont.
St. Luke's Hospital	Ottawa, Ont.
Protestant General Hospital	" "
Toronto General Hospital	Toronto, Ont.
Guelph General Hospital	Guelph, Ont.
Hotel Dieu Hospital	Windsor, Ont.
Victoria Hospital	London, Ont.
Winnipeg General Hospital	Winnipeg, Man.
I.O.D.E. Hospital	" "
Manitoba Military Hospital	" "
St. Boniface Hospital	" "
General Hospital	Brandon, Man.
Grey Nuns' Hospital	Regina, Sask.
St. Paul's Hospital	Saskatoon, Sask.
Saskatoon City Hospital	" "
Calgary General Hospital	Calgary, Atla.
Banff Sanatorium	Banff, Alta.
Royal Inland Hospital	Kamloops, B.C.
General Hospital	Vancouver, B.C.
Kootenay Lake Hospital	Kootenay Lake, B.C.

II. TUBERCULOSIS SANATORIA

Nova Scotia Sanatorium	Kentvile, N.S.
Lady Grey Sanatorium	Ottawa, Ont.
Mountain Sanatorium	Hamilton, Ont.
Muskoka Cottage Sanatorium	Gravenhurst, Ont.
Calydor Sanatorium	" "
Queen Alexandra Sanatorium	London, Ont.
Manitoba Provincial Sanatorium	Ninette, Man.
King Edward Sanatorium	Winnipeg, Man.
Saskatchewan Provincial Sanatorium	Fort Qu'Appelle, Sask.
Tranquille Sanatorium	Tranquille, B.C.
St. John County Hospital	East St. John, N.B.

III. HOSPITALS FOR THE INSANE

Nova Scotia Hospital	Dartmouth, N.S.
Falconwood Hospital	Falconwood, P.E.I.
St. Jean de Dieu Hospital	Longue Pointe, P.Q.
Protestant Hospital	Verdun, P.Q.
Eastern Hospital	Brockville, Ont.

III. HOSPITALS FOR THE INSANE—*Concluded.*

Rockwood Hospital	Kingston, Ont.
Toronto Hospital for Insane	Toronto, Ont.
Hamilton Hospital for Insane	Hamilton, Ont.
Mimico Hospital	Mimico, Ont.
Hospital for Feeble-Minded	Orillia, Ont.
Homewood Sanatorium	Guelph, Ont.
Whitby Hospital	Whitby, Ont.
Selkirk Asylum	Selkirk, Man.
Provincial Hospital	Battleford, Sask.
Ponoka Hospital	Ponoka, Alta.
Red Deer Hospital	Red Deer, Alta.
New Westminster Hospital	New Westminster, B.C.
Essondale Hospital	Vancouver, B.C.
St. John's Asylum	St. John, N.B.

Medical Representatives, Other Than at Unit Headquarters, Sub-Offices and Institutions

SUMMARY BY UNITS

		Number of Medical Representatives
"A" Unit—Headquarters,	Montreal, P.Q.	26
"B" " "	Halifax, N.S.	81
"C" " "	Kingston, Ont.	64
"D" " "	Toronto, Ont.	51
"F" " "	London, Ont.	36
"G" " "	Winnipeg, Man.	60
"H" " "	Regina, Sask.	13
"I" " "	Calgary, Alta.	38
"J" " "	Vancouver, B.C.	77
"K" " "	Fredericton, N.B.	15
		461

LOCATION OF CLINICS

"A" Unit—	Montreal; Quebec City.
"B" "	Halifax.
"C" "	Ottawa; Kingston.
"D" "	Toronto; Hamilton.
"F" "	London; Windsor; Guelph.
"G" "	Winnipeg.
"H" "	Regina; Saskatoon.
"I" "	Calgary; Edmonton.
"J" "	Vancouver; Victoria.
"K" "	Fredericton; St. John.

DENTAL SERVICES

The various branches of the Department of Soldiers' Civil Re-establishment were organized as occasion demanded, and the Dental Branch was similarly the offspring of necessity. As the department increased the number of links in its chain of hospitals and sanatoria from coast to coast, the necessity of having its own Dental Branch became obligatory.

Prior to November, 1919, dental services rendered, had been under the control of the Medical Branch, but as a result of representations made by leading members of the dental profession, the department decided that, to secure the best results, it was advisable to place dental services under a dental executive, which was done.

Plans were immediately adopted for placing in active operation an organization that would supply dental services where needed, and regulations to limit and control such services were formulated and approved.

PERSONNEL

The organization provided for a director, deputy director, and staff at headquarters, unit dental directors, dental surgeons in charge of clinics with subordinate staffs, and dental representatives.

Following the adoption of the regulations, clinics were established in rapid succession in the principal centres of the Dominion, and arrangements were made whereby dental services would be rendered under departmental supervision by civilian dentists in centres not sufficiently large to warrant the expense of a separate clinic.

ELIGIBILITY

Under the regulations of the C.E.F., any member of the Canadian forces was both eligible and entitled to dental services at the time of his discharge. Ex-Canadian soldiers at the time of their discharge were entitled to receive free dental services, and were presented with dental cards authorizing them to receive such services from the military dentists within a certain period after date of discharge. Various causes combined to prevent a large number of the discharged men from receiving these services within the stipulated time, and a few months ago, an Order in Council was passed (P.C. 603) which provided, under certain conditions, for giving to those men who applied for treatment prior to the 1st September, 1920, the dental services to which they were entitled. These services are now being rendered by the Department of Militia and Defence.

Under the Department of Soldiers' Civil Re-establishment, which is a civilian institution, ex-members of the forces, who are on the strength of the department for medical treatment or vocational training, and in some instances, men who are pensioners, are eligible to receive dental services, but do not become entitled to these services until other conditions have been fulfilled.

The Dental Branch of the department was established, not for the purpose of administering dental services to every ex-member of the forces who was taken on the strength of the department, but to serve, when necessary, as an adjunct in the restoration of such ex-members of the forces to normal health and strength. Those entitled to dental treatment by the department are:—

(1) Ex-members of the forces on the treatment or training strength of the department. This class receives dental treatment only when it is indicated by the Unit Medical Director that such treatment will improve the man's general condition.

(2) Ex-members of the forces who require dental treatment for repair of direct damage to the jaw or teeth resulting from war service. This class includes cases of recurrence of infected mouth due to service which require treatment for a toxic systematic condition, provided the medical examiner finds the general condition due to the recurrence of oral infection. These men are placed in the same position as those suffering from any other physical disability due to service, and receive either full pay and allowances or are taken on the strength as out-patients, Class 2, being granted allowances for the time lost in attending for treatment, according to the circumstances of the case.

(3) Ex-members of the forces referred to the department by the Board of Pension Commissioners when it is considered that dental treatment is necessary to lower pensionable disability.

The privilege extended to ex-Canadian soldiers of free medical services for a period of a year after date of their discharge, does not apply to dental services.

CLINICS

In addition to providing services at the main clinics for out-patients, dental operators attended to the needs of departmental in-patients of ninety-eight institutions, as follows: "A" Unit, 13; "B" Unit, 6; "C" Unit, 10; "D" Unit, 15; "F" Unit, 12; "G" Unit, 8; "H" Unit, 6; "I" Unit, 11; "J" Unit, 11; "K" Unit, 6.

CIVILIAN REPRESENTATIVES

Coincident with the opening of dental clinics, civilian dentists were appointed as dental representatives to the number of over one hundred and eighty (180), and these have supplied the necessary treatment in their localities, functioning from Victoria to Halifax. They proved particularly essential to a large number of ex-soldiers who, as out-patients, were referred by the Unit Medical Directors for dental services.

TYPE OF WORK

As in the army, dental services are limited, as a rule, to cement and amalgam fillings, extractions and ordinary vulcanite dentures. Under certain conditions, vulcanite dentures with one or two teeth are unserviceable, and in these cases, bridges are provided. Provision has been made to meet the wishes of those who are entitled to receive only vulcanite dentures but desire bridgework; the patients paying the difference in cost between the work to which they are entitled and that not chargeable to public funds.

The dental division of the department is opposed to making fixed bridges for tubercular patients and also discourages the insertion of gold fillings, a policy which has occasionally been adversely criticised.

Two reasons exist for opposing fixed bridges: (a) a bridge must necessarily have a support at each end, and, in the case of a dental bridge, these supports are natural teeth; e.g. three teeth, called dummies, are placed between the supports, which means that the bridge consists of two supports to bear the stress and strain of mastification for five teeth. The vitality and natural powers of resistance of certain patients, particularly those suffering from tuberculosis, are undoubtedly below normal and for such patients any unnecessary stress must be avoided. For somewhat similar reasons, gold fillings are not advisable and every observing dental surgeon knows that an analogous condition exists at certain periods of girlhood and womanhood when operations involving crowns, bridges and gold fillings should be postponed and devitalized teeth carefully watched. (b) Vulcanite dentures can be readily removed and washed whereas it is sometimes extremely difficult to maintain fixed bridges in a sanitary condition.

Dentists in charge of services for tubercular and mental patients need to be possessed of special characteristics and the department is fortunate in having on its staff operators who are enthusiastic about such work and are cordially liked in the institutions. Patience, tact, ability to be a "good mixer" are requisites for success in getting work performed, as these patients are nervous and cannot be given long sittings at any one time. The amount of work accomplished can never be regarded as a criterion of the time consumed by the operator as the keeping and length of engagements are very problematical, being dependent on the physical condition of the patient at any special hour.

Direct dental injuries to the jaw or teeth by gunshot wound or similar causes, receive the same consideration as any other physical disability sustained on service. Unstinted care and expense are bestowed in rendering the necessary restoration in such cases.

RECIPROCAL SERVICES

By mutual agreements between the Imperial, Newfoundland, United States, New Zealand and Canadian Governments, provision has been made whereby ex-soldiers of the one country receive, when resident in the other country, treatment, including dental services, for disabilities due to war service. In this connection, it must be noted that under arrangements with the Imperial Government, dental services for ex-British soldiers resident in the United States are under the administration of the Department of Soldiers' Civil Re-establishment. Dental Services by the Department are provided, acording to the regulations of each of these countries, for,—

(*a*) *Ex-members of the Canadian Forces in Canada.*—As already outlined.

(*b*) *Ex-members of the Canadian Forces in the United States.*—Through the Bureau of War Risk Insurance, Washington. Prior to rendering dental services (except in emergency cases), the authority of the department must be obtained.

(*c*) *Ex-members of the Imperial Forces in Canada.*

(*d*) *Ex-members of the Imperial Forces in the United States.*—Through the Bureau of War Risk Insurance. All requests for dental services must receive the sanction of the department before accounts for such services are recognized and paid on behalf of the Imperial Government.

(*e*) *Ex-members of the American Forces in Canada.*—Dental services for the above are authorized by the Bureau of War Risk Insurance, Washington, and all accounts for work performed are submitted to the Bureau for payment.

(*f*) *Ex-members of the Forces of Other Countries.*—Dental services are also rendered to ex-soldiers of sister colonies and other allied nations, when duly authorized by properly accredited representatives.

THE NECESSITY FOR DENTAL SERVICES

The importance of being dentally sound loomed large early in the war when recruits presented themselves for enlistment and men, otherwise fit, were rejected until their dental disabilities were corrected. Since then the conviction that a patient must be dentally sound before other desired results can be obtained has become paramount.

Large amounts of money have been expended by the department in the construction of hospitals and sanatoria, the most up-to-date methods of cold storage have been installed, the supply of pure water has been assured and the skill of the dietitian obtained for ex-soldier patients. To crown these efforts with success, the dentist takes charge of the last chamber in which the food is placed. The power to grind or masticate the food is restored, where lacking; mouths that were hot-beds and breeding places of infection are made healthy, the net result being that the food, uncontaminated by the health destroying bacteria of the mouth, passes, after mastication, through the process of digestion and culminates in the production of pure blood without which the fountains of health and strength are depleted and the essential factors of health and strength irrevocably lost.

The work of dental surgeons has, in the last few years, extended over a wide field and is no longer limited to extractions, dentures, bridges and fillings. The big problem of the moment, in both the medical and dental professions, is the question of just what diseases are of dental origin. Pathologists now concede that certain heart, joint and kidney infections may be regarded as one disease and are largely of mouth origin. Quite an army of the best family physicians now demand a dental diagnosis just as soon as they are unable to determine the exact cause of a patient's physical disorder.

INSTRUCTION TO PATIENTS

Scientific investigations have shown that the difference by weight and count in the number of bacteria per milligram of tooth scrapings in dirty mouths to that of reasonably clean mouths, will range from eight hundred millions in the dirty mouths to not more than eight millions in the clean mouths. Ten or fifteen minutes each day, spent in effective mouth sanitation will produce the safe minimum of bacteria, and medical superintendents of departmental institutions have given their hearty and active co-operation to the dental staff in the efforts of the latter to inculcate the habits of dental cleanliness. Prophylactic toothbrushes and mouth washes are provided for the patients, and the habit of proper cleansing of the teeth throughout the day is rapidly gaining ground.

DENTAL SERVICES FACTOR IN RESTORATION OF HEALTH

Very interesting results have been obtained where dental treatment for inmates of institutions was practically the sole factor in restoring patients to normal health, particularly where myalgia, neurasthenia, and cognate ills were indicated. The high regard in which dental treatment is held has been enhanced by outstanding results obtained in some of the tubercular institutions:—

The reports of Dr. H. A. Farris, Medical Superintendent of the Saint John County Hospital, on three patients are worth quoting:—

"Major ———— was sent here with a diagnosis of pulmonary tuberculosis. I gave him a very thorough examination, and had his chest X-rayed, but could find no evidence of pulmonary tuberculosis. He had a cough, fatigue, pains and afternoon temperature. I had to send him out with a diagnosis as non-tuberculous and symptoms of unknown origin. Dental examination, however, showed his teeth in bad condition. His teeth were removed and he has been in good health since.

"Ex-No. ———— was sent here with a diagnosis of pulmonary tuberculosis. He was tired, fever and ailing generally. I could find nothing in his chest. I X-rayed his teeth and found a large root abscess. He was discharged as non-tuberculous. He had his tooth treated and it was remarkable how much he improved.

"We had one civilian patient, Miss ————, who had pulmonary tuberculosis, but in spite of continued improvement of her chest, she ran an evening fever of nearly 100 for many weeks, till finally one tooth gave her some trouble and the dentist pulled the tooth for her and her temperature dropped to normal immediately and within six weeks we discharged the patient in good condition."

The S.C.R. Dental Clinic at "The Mountain Sanatorium," Hamilton, has rendered invaluable assistance in the treatment of tubercular patients.

Dr. J. H. Holbrook, physician-in-charge, emphasizes the importance of dental services in the following few, selected from many, reports:—

"Major.....was admitted to the Mountain Sanatorium on January 2, 1917, and discharged June 19, 1918. X-ray of teeth showed an apical abscess on July 23, 1917, and this tooth was extracted. Previous to this, temperature had been slightly above normal almost daily, and following extraction there was considerable improvement, temperature being normal for several days at a time. When a dentist was permanently appointed to this institution, he examined this patient and expressed doubt as to the condition of one other tooth, and this was X-rayed, showing slight abnormality at the root in April, 1918. This tooth was then extracted and temperature remained normal from that date to time of discharge on June 19, 1918.

"Lung condition on admission showed a very definite lesion at the right apex with marked consolidation and with signs indicative of cavitation. Lung condition remained fairly stationary till first tooth was extracted, when improvement set in. Improvement was more marked after second extraction, and we consider that it is a possibility that the infection from the root abscess was carried by the blood to the lung where it localized leading to the breaking down of an old healed condition at the apex of the right lung. In any case the lung condition remained practically stationary until the tooth was extracted and improvement was very rapid after extraction of the second tooth. Major.....has now been discharged two and one half years and is "carrying on" as head of the firm of.....Company."

"Ex-Pte.....was admitted to the Mountain Sanatorium on March 27, 1918, and discharged December 9, 1918.

"He ran a temperature continuously for several months, and while he had extensive impairment of resonance in the lung, yet we were never able to find chest signs indicating active trouble. His temperature was so persistent and so regular that we considered that it was not typical of tuberculosis. Accordingly we advised X-ray examination of the teeth, with the result that focal abscesses were discovered and after this condition was completely cleared up, the temperature had come to normal and, apart from a slight rise which can be accounted for by other causes, temperature remained normal after teeth were extracted."

The following is an extract from a letter written by Dr. Holbrook, under date of the 14th December, 1920:—

"We now make it a routine to have every man's teeth examined as soon as he is admitted and if there is anything suspicious, he is at once sent to the X-ray room. As a result, these conditions are cleared up very soon after admission. We could report several other cases that had shown abscessed teeth and had been under treatment in other institutions, or in poor health for a long time previous to admission, but cannot give the results so definitely as in these cases that came directly under our observation.

"We wish to say that we believe that focal abscesses can lead to localized lung disease and can even lead to the breaking down of an old healed tuberculous condition and that such cases are not likely to do well under sanatorium treatment until the dental conditions are first cleared up."

At the annual meeting of "The Canadian Association for the Prevention of Tuberculosis," held in Vancouver last summer, the general opinion expressed by experts present was that a dentist should be attached to every tuberculosis institution and an address by Dr. J. R. Byers, Medical Superintendent of the Laurentian Sanatorium, showed conclusively in what manner diseased teeth may prove to be a factor of moment in the production of lung and other diseases, that such "teeth afford a haven for disease germs which propagate rapidly, that the resulting poisons are absorbed into the system and that results of a disastrous nature occur in distant fields either as a result of these poisons or more disastrously, as a result of the actual germ getting into the lymph or blood streams."

FACIAL WAR INJURIES.

In addition to treatment for systemic conditions and operations involving fillings, dentures and bridges, a new type of dental work, resulting from war injuries, has arisen, requiring delicate, skilful, and painstaking manipulation and taxing the mechanical and artistic ingenuity of the dental surgeon.

With very few exceptions, all special jaw and facial cases, have, until recently, been attended to by the dental clinic at the Dominion Orthopaedic Hospital, Toronto, with Major Campbell in charge, and at the R.C.D.S., where Major Cummer was supervisor of the work.

The following data were obtained from Major Campbell prior to the transfer of the Dominion Orthopaedic Hospital from the Department of Militia and Defence to the Department of Soldiers' Civil Re-establishment on the first November, 1920:—

Class 1.—Total number of casualties of this kind approximately.. ..	2,000
Class 2.—Total number of patients supplied with complicated prostheses..	500
Class 3.—Cases in hospital under treatment or on leave pending stages of operation..	46

Class 1.—The greater number of these cases has been completed and finally discharged. But in some instances, the lower prostheses of these men will have to be remodelled. Many of these cases could be attended to by ordinary dental services.

Class 2.—In these cases prostheses have been constructed which are complicated, necessitating much practice and experience and will from time to time require apparati to be constructed. This class is made up of those men having lost part of mandible, in two cases all of this bone. Others having lost half, have mechanical arrangements to supply loss of condyle or bone substance to allow remaining portion of jaw to be of some service. Also cases in which all or part of superior maxillae have been lost with consequent loss of speech. Many of these latter cases, although unable to eat ordinary diet, are put in such condition that speech is possible, sometimes normal. Well cooked foods can be eaten with comfort. These types, for all time, owing to tissue changes, require attention.

Class 3.—Cases in hospital. Most of these are purely facial cases with dental work fairly completed. There are a few cases still awaiting bone graft of mandible who will require prostheses. Of the 123 men discharged since December 1919, a few of the later cases, 20 in number, have not had final prostheses constructed dependent on the fact that bone grafts had not yet become stabilized.

EQUIPMENT AND SUPPLIES

The major portion of the heavy equipment was obtained in the various units by transfer from the Militia and Defence clinics. Dental consumable supplies do not occupy much space and are of comparatively light weight. It was therefore decided that instead of having three or more stores in various centres one central store at 185 Spadina avenue, Toronto, would be quite sufficient to supply all units, thereby reducing stores' staff as well as other overhead expenses to a minimum. The expert advice of an experienced dental storekeeper was obtained for the installation of shelves and the grouping of supplies, with the result that central dental stores is regarded as one of the model stores in the department.

The union of medical and dental stores under the personal supervision of the medical storekeeper was proposed but was found impracticable owing to the great dissimilarity between the stores concerned and the fact that a storekeeper with the requisite training for both classes was unavailable. The list of dental consumable supplies includes nearly three hundred articles and to these are added various types of equipment.

REPORTS

Control and intimate knowledge of the various clinics and all phases of dental services are maintained by a system of reports which are classified under daily, weekly, monthly and quarterly. These provide the ex-number, name, ex-unit, address and disability of each patient and detail the work performed. Returns are made of the equip-

ment and consumable supplies, enabling head office to enforce a close check on expenditures. Reports are used in connection with the work performed by civilian representatives. After an application is received, the applicant's eligibility must be established before the type of work required and cost of same are considered and every care is exercised to safeguard the expenditure of public funds. Returns of the operations performed in the clinic provide the means of checking the work of each operator.

In addition to the reports forwarded to head office for work performed in Canada for ex-Canadian soldiers, reports are forwarded for work performed for ex-members of the Imperial forces, United States forces and other countries with which reciprocal arrangements have been made. The reports forwarded from the United States are very numerous as the Dental Branch is responsible for dental work in the States for not only ex-members of the Canadian forces, but also for ex-members of the Imperial forces, and ex-members of forces of other countries with which arrangements have been concluded.

CORRESPONDENCE

As an indication of the amount of letter-writing required, 5,037 official letters have passed out from the dental division in the past months. Of these 798 were written to the Bureau of War Risk Insurance, as follows: Canadian, 564; Imperial, 200; American, 24. In connection with dental correspondence at head office, the file of each individual whose case is being considered is drawn from the Central Registry, examined for the desired information and returned. During the past months 6,000 such examinations have been made. A card system is in force which records the files drawn and their disposal.

DENTAL SERVICES RENDERED IN ALL DEPARTMENTAL CLINICS FROM JANUARY 1, 1920, to DECEMBER 31, 1920

Amalgam fillings	18,441
Temporary fillings (*a*) G.P. (*b*) Cement	6,405
Cement fillings	7,528
Treatments putrescent pulp	16,871
Root fillings	2,899
Pulp cappings	2,146
Devitalizations	2,914
Pyorrhoea and trench mouth treatments	8,503
Impressions	8,351
Bites	6,117
Try ins	5,555
Synthetic porcelain fillings	5,150
Repairs of dentures	2,462
Prophylaxes	11,195
Extractions	19,704
Anaesthetic, general	528
" local	10,253
Dentures, upper	1,743
" lower	1,045
" partial	3,349
Gold clasps	5,677
Examinations and mouth charts	16,517
Total operations	163,353

DEPARTMENTAL PATIENTS TREATED BY OTHER THAN DEPARTMENTAL SALARIED DENTISTS FROM JANUARY 1, 1920, TO DECEMBER 31, 1920

In Canada—		
Ex-Canadian soldiers	665	
Ex-Imperial soldiers	71	
		736
In United States of America—		
Ex-Canadian soldiers	12	
Ex-Imperial soldiers	6	
		18
Total operations		754

ORTHOPÆDIC AND SURGICAL APPLIANCES BRANCH

INITIAL TASK COMPLETE

In reviewing the work of the Orthopædic and Surgical Appliances Branch for the present year, it may be said that the branch in the spring accomplished one of the main tasks for which it was established, which was to furnish with artificial limbs as quickly as possible the amputation cases that were brought home to Canada in the latter stages of and after the close of the war. Excepting a few cases with medical complications every amputated man has been fitted with the appliance necessary, and in most cases with a duplicate appliance.

PRODUCTION ARTIFICIAL LIMBS

Throughout the last three years, as time advanced, it was necessary always to provide for an increase of production to cope with the ever-growing need. Early in this year, however, the demand reached its maximum and a gradual decline following the output of the main factory in Toronto has steadied down to maintenance and repairs and to the periodical renewal of appliances necessary through legitimate wear and tear. In the case of artificial legs it is expected that these should be serviceable for at least four years with repairs before renewals are necessary; but, in the case of artificial arms it is considered that on a broad average these should at least serve six years. However, in this respect, owing to the variety in material used in the various types, and the varying degree of usage to which they are subjected, this estimate is mainly conjectural.

Another important fact contributing to this decline is that the amputation cases now require less frequent adjustment, alterations and renewals of limb for the natural reason that they are by this time becoming more accustomed to wearing a limb. In most cases the stump has shrunk to a somewhat permanent form. The trying period when the stump is tender and not yet hardy enough to stand the pressure of an artificial limb without discomfort is in general passed. The average case, therefore, is now in better condition to fit a leg that gives him satisfaction and comfort, and it is observed that when a man is in possession of a comfortable limb he, as a rule, takes the best of care of it.

In many cases also, when first attempting to wear a limb, faults in the stump were revealed and further surgical operations were necessary before a limb could be worn. These, of course, rendered the first fit useless; and so it happened that not infrequently several sockets, or entirely new limbs had to be constructed before real efficiency could be obtained. Hospitals seem by this time to have cleared up all such cases and so the necessity of renewing limbs at short intervals has almost ceased to occur.

PRODUCTION MINOR APPLIANCES

The decrease in the requisitions received by the branch applies only to artificial limbs and splints of a temporary nature as the demand for orthopædic boots, elastic goods, artificial eyes, and other less durable articles remains constant owing to the regular need of renewals at much shorter periods.

STAFF

As the pressure of work gradually eased off in the Toronto factory, it was necessary to reduce this year the operative staff. It is now less than one-half of its hitherto maximum strength. In the discharge of surplus labour, particular care was taken that wherever possible not only returned men but disabled cases were retained. Of this it is sufficient proof to state that 24 per cent of the employees are amputation cases alone, not to mention disabilities of other natures.

In June, 1916, when the Orthopædic and Surgical Appliances Branch was in the process of being formed, it was found that sufficient labour in the class of work required did not exist owing to the sudden magnitude to which the industry had grown. It was therefore decided to teach returned men this trade, especially amputation cases. This was done and the development of these men has been excellent, they having qualified as good limb-fitters' helpers, leatherworkers, etc., and even in some cases as qualified limb fitters. It has been necessary to retain a few experts to handle the more difficult cases and to supervise the work of the others, as all considerations must be secondary to the turning out the best appliances for the disabled man.

ACTIVITY OF DEPOTS

Mention has been made so far only of the main factory at Toronto as the decline observed in that centre has not taken place in the depots in the other provinces. On the contrary, it has been necessary to maintain and, in some cases, even to augment the staffs of the outside depots. This condition will readily be understood when it is remembered that all orthopædic cases on being repatriated from the hospitals of the United Kingdom were concentrated at Toronto for treatment and fitting of appliances. As this work was completed the men scattered to their homes, thus diminishing the work at Toronto but adding to that of the depots in the maintenance and renewals of the appliances.

NEW DEPOTS

In addition to increasing the outside staffs it was found that a new centre should be established in western Ontario to provide adequately for the large number of orthopædic cases in that area. A depot was therefore established in London.

SUPPLY OF APPLIANCES FOR EX-CANADIANS RESIDENT IN THE BRITISH ISLES

In January last a new depot was also opened in London, England, and placed under the administration of the overseas representative of the department. This important step was taken on account of the large number of disabled ex-members of the Canadian forces who had remained in the British Isles, or had returned there after repatriation, and had been issued with the standard appliances as manufactured by the branch. Standard parts and spare parts for these appliances are supplied to the depot in London, at which a limbfitter is employed, and who therefore is in a position to keep such appliances in England in repair, and can make up a new appliance for a man who has become accustomed to the use of the Canadian standards. For appliances not manufactured by the branch contracts have been placed with first-class firms in the various districts, and thus it is only necessary for an ex-Canadian soldier in any part of the British Isles to apply to the overseas representative when in need of attention, and all arrangements are made for his case to be adjusted. The extension of this sphere of the overseas representative to include the control of orthopaedic appliances was received with much satisfaction by our men in the British Isles.

It is now also the duty of the overseas representative to keep in close touch with all progress made in the production of orthopaedic appliances and to keep the branch in Canada informed.

SUPPLY OF APPLIANCES FOR EX-CANADIANS AND EX-IMPERIALS IN UNITED STATES

For the supply of orthopædic appliances to former members of the forces resident in the United States a satisfactory reciprocal agreement was drawn up in October, 1919, whereby the Governments of Canada and the United States would each take care of the disabled men of the other who reside in their respective territories. Early this year this arrangement was put into practice and is being followed with satisfactory results, and in this connection the branch has pleasure in expressing its gratitude for the efficient manner and interest which the United States Government is taking in the care of Canadian and British orthopaedic cases.

FUNCTIONAL TRAINING CLASSES

In September the functional training classes, instituted last year to teach men how to derive the most benefit from artificial limbs, were wound up having trained all the men who had applied for the course. These classes were under the administration of Mr. W. S. Dobbs, himself an arm amputation case. Mr. Dobbs selected a staff of instructors each either an arm or leg amputation case. These instructors were assembled at Toronto and trained for this special work. The leg cases were taught how to walk properly, on the level, on inclines, on stairs, on rough surfaces, and to acquire confidence by such games as Badminton. The arm instructors were trained to teach the fullest uses of work arms and hooks, by the manipulation of tools of all kinds. The care and adjustment of limbs and the care of the stump were also emphasized in the curriculum.

An arm and leg instructor were then despatched to each of the following centres where classes were opened, namely: Halifax, Montreal, Toronto, Winnipeg, Regina, Calgary and Vancouver.

Every amputation case was urged to attend these classes. Vocational pay and allowances were granted to all out-of-town cases; evening classes were organized for men resident in the city where they were conducted. Every case that did not reply to the invitation was followed by a personal visit where possible and the advantages of the instruction placed before him. In spite of these efforts the number attending the classes was comparatively small; 446 men in all completed the training. Those who took part in the classes were all enthusiastic over the extent to which they benefited by the training, and it is generally observed that the men who were thus trained make constant use of their limbs.

POLICY OF STANDARDIZATION OF PRODUCTION

In the appliances produced by the factory no departure has been made from the original policy that these men should be turned out according to standards as far as possible. The experience of another year continues to show even more that the policy of a standard limb was the most practical and satisfactory to adopt. By the expression "standard limb" it must not be understood that all appliances are turned out ready to wear by the gross, but that certain mechanical parts and accessories are made common to all of the same type. Each leg for example is in reality made individually for each patient but has the advantage that standard parts can be supplied at all times from any of the Orthopaedic and Surgical Appliances depots, which are kept stocked by the Central Stores of the Toronto factory, where they are manufactured. Also such supplies as are necesary for the manufacturing that is done in the depots are distributed from Central Stores. The appliances are by this means easily and properly kept in repair, and it is difficult to conceive how this essential work could be done otherwise. As a result of the facilities made possible through standardization it is becoming apparent that more and more business will be done through the mail, between the Orthopaedic and Surgical Appliances Branch and the patients. Thus, instead of men reporting in person, a procedure often irksome and inconvenient to themselves, the appliances are forwarded by express to be overhauled or to be fitted with new parts, and these parts being readily available the work is executed and the limb returned without delay. In addition to the convenience of distribution, the obvious economical advantages of standardized production, both in the factory and in the administration, need not be discussed in this report.

WORKMEN'S COMPENSATION BOARD CASES, ETC.

An important extension in the sphere of activities of the Orthapædic and Surgical Appliances Branch was made when an Order in Council was passed on the 25th Septem-

ber, 1920, authorizing the branch to manufacture and supply artificial arms, legs, and other prosthetic appliances to any other department of the Government of Canada, to the Workmen's Compensation Board of Ontario and to similar boards in other provinces as requested to do so, at prices to be determined from time to time by the department, so long as facilities exist for manufacturing and supplying such appliances to ex-members of the forces.*

It is expected that the present plant of the Orthopædic and Surgical Appliances Branch will be sufficient to cope with this work as an examination of available statistics shows that the number of accidents resulting in a need for artificial limbs and other appliances is small and not enough to require additional equipment on the part of the branch. The arrangements having been completed late in the year there is as yet no work for patients of this class on which to report.

Research Division

personnel

The research work is carried out by a staff of three mechanics and one limbmaker, under the supervision of the Designs Engineer. The object of this division is to devise and perfect new orthopædic equipment, and to improve on that which is already in use as standard.

new appliances produced

During the past year the work has been confined mostly to arms and legs. Two new limbs have been successfully developed and standardized, an improved type of tilting table leg for disarticulation-of-hip amputations, and a ring-arm for disarticulation-of-shoulder amputations.

The above mentioned leg is of a construction which eliminates to a large degree the discomforts of any of the older types issued. The patients fitted with this limb walk well without the aid of crutch or stick and can sit down with comfort in a natural position, which was not possible with the older types supplied, and this objection still exists in many makes of this type of leg. The bucket is made of double ply reinforced leather, and the steel joints connecting this to the wooden thigh-piece are constructed so that when the patient is seated there is no undue interference between the clothing and the joints, causing the excessive wear which was the objectionable feature of previous issues.

Disarticulation-of-shoulder amputations are the most difficult of all cases to equip with a satisfactory appliance. The ring-arm designed for this type is beyond doubt a great advance over previous issues, which were seldom if ever worn, being justly looked upon more as a hindrance than a help. The points in this arm are: the weight of the arm is distributed between the shoulder and the side of the chest, and also a much greater range of movement can be had than was heretofore possible, or than can be had from any other arm observed.

special appliances

Problem cases are turned over to this department for attention. That is to say, where no known appliance can be suitably adopted by reason of the peculiarity of the disability, it is necessary to develop a satisfactory appliance to suit those individual requirements. This particular phase of the work is carried out in close conjunction with the orthopaedic consultants. The majority of these cases have required special splints, braces or working appliances for hand amputations. As illustrations of this work there may be mentioned a splint for flail shoulder which enables the useless arm

* See Appendix VII, page 157.

to function in a limited degree. A splint was designed for a case suffering from excessive lateral mobility of the knee which enabled a backwoodsman to resume his former trade. Before being thus equipped he was unable to carry on. A working appliance for amputation of the fingers is now in constant use by a house-painter, and permits him to hold his own in his trade, and many more similar cases are on record.

APPLIANCES OF OTHER COUNTRIES STUDIED

Specimens of new arms and legs are supplied to the branch from the allied countries which enable the experimental division to contrast the standard arms and legs with those thus submitted. The arms are of special interest, as it is in these appliances that so much research work remains to be done in order to get, if at all possible, an arm which will fill the place of the lost member as efficiently as it has been possible to replace a lost leg. These arms being thoroughly examined and tested, it was found that the department would be unable to adopt any method of construction or manipulation from them which would have increased to any extent the efficiency of the standard arms and accessories now issued.

An excellent opportunity was afforded to observe the various appliances when being used in the functional training classes, and many valuable suggestions for improvement were gained by taking note of the difficulties which the men experienced in endeavouring to use the appliances. Several good ideas were submitted by the men and instructors and adopted, and a decided advance in the usefulness and comfort in wearing the appliances resulted. Before any new device is adopted it is submitted to the orthopædic surgeon who is responsible that it is satisfactory from the surgical standpoint.

In seeking to improve standard appliances one guiding principle has been to reduce the weight wherever possible, without compromising the requisite strength. For example, the skin of an A.K. artificial leg has been reduced in weight from six to four ounces without sacrificing safety in any way. Below-elbow dress-arms, commonly used by men in office work, have been remodelled so as to show a reduction of one pound. Under a thorough test this arm has proved itself suitable for the purposes designed, namely, light work and dress wear, and the greatest advantage is in the general comfort to men wearing it.

PATENT RECORDS INVESTIGATED

The records of the Patent Office are searched as they come out and the specifications of all new devices are examined in order that the department may keep up to date in the development of orthopædic appliances. Many samples are submitted by private firms which are all tested and such as are considered an improvement on existing issues are purchased or manufactured on a royalty basis by the branch, if such proves to be the more economical method of acquirement.

PURCHASES

Before requisitions for material are passed to the Purchasing Branch these are scrutinized by the Experimental Engineer to ensure that nothing but suitable material is ordered for use in the factory and depots.

Ophthalmic Division

Previous to 1920 no attempt had been made by the Orthopædic and Surgical Appliances Branch to manufacture or stock and distribute artificial eyes, eye-glasses, or other optical appliances. Patients presenting prescriptions from the eye clinic of the department for such were provided with a purchase order on a local firm in order that these prescriptions might be filled.

INADEQUATE SUPPLY OF ARTIFICIAL EYES

It was found, however, that while this arrangement was satisfactory for the supply of spectacles of all types, it did not adequately provide for the needs of artificial eyes and facial cases, mainly because the stocks carried by local firms were not equal to the demand; in many cases also it was not possible to fit a ready-made eye with the desired effects on account of injuries to the socket. These special models could not be obtained in Canada and it was necessary to send such cases to New York for fitting and supply. This procedure involved a disproportionate expenditure.

SITUATION IN BRITISH ISLES AND REMEDY

To a much greater extent the War Office in the United Kingdom was confronted with the same problem and in order to obtain artificial eyes in sufficient quantity and variety it was decided to equip a factory and to manufacture for itself artificial eyes and spectacles. In this way the Army Spectacle Depot was established in London and an adequate supply of ophthalmic appliances assured. The Army Spectacle Depot was this year transferred to the Ministry of Pensions.

SUPPLIES OBTAINED FROM ENGLAND

By arrangement with the Ministry of Pensions the department in January, 1920, was given the privilege of obtaining supplies of artificial eyes from the Army Spectacle Depot at cost price. A first supply of 2,000 eyes was procured at an average cost of $1. In this way a substantial saving was effected as the local price of artificial eyes ranged from $5 to $10, and from $15 to $20 for specially-made eyes in New York. The eyes supplied by the Army Spectacle Depot are of the best quality and are at least the equal of any procured from other sources.

With this stock in hand it became possible to select for the normal case an eye both perfect in colour and size and, indeed, with the larger selection a few cases that would necessarily have previously been sent to New York could now be fitted successfully from stock.

It has been the policy from the first in the case of men sent to New York for fitting to purchase an extra eye which was kept in Toronto as a model. This was done in order that it would not be necessary for a man to make further journeys to New York for renewals as the model has only to be submitted and a copy obtained.

DISTRIBUTION

As soon as it was possible for the department to obtain artificial eyes from England it was decided that a model eye for every case be procured. Instructions were thus issued to all the depots that in every case where a purchase order was given on a local firm for an artificial eye a duplicate should be sent to Toronto. It is intended that this arrangement shall continue until eventually Head Office will have a model for every case. Thus it is hoped that no matter in what part of the country, or, indeed, the world, a man may be, it will be possible to supply him with an artificial eye on his application to Head Office, Toronto.

INSTALMENT OF OPTICAL PLANT

Thus far the supply of artificial eyes was much improved but the difficulty of fitting satisfactorily cases with abnormal conditions still existed and the department was still dependent on New York makers for the proper care of such patients. For many of these patients it was only necessary to alter slightly a stock eye in order to obtain the proper shape, and as this work can be easily done with the proper equipment it was decided to install a small optical plant, consisting of a lens grinder,

polisher, cutter, etc. The entire plant cost $550. An expert mechanical optician was employed to take care of this work. As the equipment necessary for the work on artificial eyes practically corresponded with that used for lens grinding, it was decided also that the department should at the same time make up its own eye-glasses and spectacles for the Toronto and district cases. The Ophthalmic Division has been in operation since early in September and has fully supplied the requirements of the department in the matter of artificial eyes and eye-glasses.

It has been found that cases for whom a stock eye cannot be altered to fit satisfactorily are exceedingly uncommon and, indeed, since the branch took over this work itself it has not been necessary to send a man to New York. It is hoped, however, that in a short time it will be possible for the branch to make an individual eye when required, although it is not the intention at the present time to manufacture these in quantities as it is more economical to obtain these from England at cost price where they are manufactured in great quantities, than to manufacture with a smaller production in Toronto.

FACIAL MASKS

Another important part of the work of this department is the construction of masks for facial cases, and the condition for these unfortunate cases for whom these masks are ordered has been improved to an astonishing extent, and the masks are constantly worn by these cases. Eight of these cases have passed through the hands of this department and each has been supplied with a duplicate mask so that they may be able to submit one or the other for repairs, re-tinting, etc., when necessary.

Accounting

COSTS (LIMBS)

The average cost for 1920 of appliances manufactured by the branch is as follows:—

Artificial legs	$83 11
Artificial arms	88 51
Peg legs	24 06
Orthopædic boots	21 60
Minor orthopædic appliances	11 98

These figures represent the average cost of all types of each appliance. Thus, artificial legs have a range from $50 to $200; arms, $40 to $125. The cost in the manufacture of arms for this year shows an increase of 25 per cent, and in that of artificial legs an increase of 20 per cent over the cost of the previous year. This increase is only proportional to the rise in prices of raw material (excepting certain classes of leather) and to increased labour cost; also the smaller output tends to increase the price. Another contributory factor is that through the medium of the functional training classes the more expensive work arms, such as the Canada, and the differential, became very popular, and in the year's output there was a larger percentage of these arms over the simple dress arms than formerly. The average cost of legs was also increased by the development and issue of the new leg for disarticulation-of-the-hip cases. This leg costs two or three times the amount of any one ordinary standard willow leg.

COSTS (BOOTS)

Orthopædic boots also show an increase of 20 per cent in the cost of manufacture. The drop in the leather market did not affect the department's output until the middle of October at the earliest as stocks at previous high prices held out until that time. Again, in the spring of this year it was decided to put into these boots a

grade of leather superior to that formerly used, to serve as long as possible, as they are expensive to make, there being no two pairs alike, all requiring to be specially lasted, and demanding highly skilled labour. Thus a large quantity of the leather in stock was substituted by a better grade. The increased cost has been found to correspond exactly with the better class material. A slight rise in the cost of labour also took place.

COSTS (MINOR ORTHOPÆDIC APPLIANCES)

The cost in the manufacture of minor orthopædic appliances shows no appreciable change. These articles comprise a large variety. Many types of splint, abdominal, pelvic, nephritic belts, glasses, gloves, arch supports, braces, Bradford frames, crutches, artificial eyes, are included in this group. Some are made up in standard sizes, others only when called for in special cases, but in every instance a record of cost is kept.

In the Accounting Branch a special feature of the year's work was the installation of a uniform costing system for all depots in the Dominion, and periodical return of costs and record are now received at head office, which makes possible a close supervision of all production.

STATISTICS

Number of Appliances delivered to patients (classified) during the periods commencing January 1, 1920 to December 31, 1920, inclusive, also grand total number of appliances delivered to patients (classified) since inception.

	Delivered prior to 1920	Delivered 1920	Total
Legs (all types)	3,543	1,905	5,448
Arms (all types)	1,571	391	1,962
New socket (leg)	1,416	640	2,056
Orthopædic boots	6,486	7,079	13,565
Splints	2,403	1,586	3,989
Glasses	6,015	5,629	11,644
Eyes	567	802	1,369
Rubber goods (suspensories, urinals, knee caps, elastic stockings, etc.)	4,285	5,436	9,721
Belts (abdominal, nephritic, etc.)	967	818	1,785
Facial masks	nil	13	13
Repairs on all appliances	9,603	14,424	24,027
Grand total	36,856	38,723	75,579

TRAINING BRANCH.

The work of the Training Branch of the Department of Soldiers' Civil Re-establishment during the year 1920 has been carried on along the general lines described in last year's report.

A very large number of disabled men have been trained and successfully placed in employment during the past year and the results obtained have been due to the policy of training laid down in July, 1917, and since followed by the department.

ORGANIZATION.

A few changes affecting the organization of the Training Branch have been made during the past year. Ward occupations and curative training, which had been carried on by this branch in nearly all hospitals where ex-soldiers were being treated, passed under the control of the Treatment Branch. It was considered that the curative value of occupational therapy could best be secured if placed under the supervision and direction of that branch.

In addition to the transfer of the occupational and curative training to the Treatment Branch it was considered advisable to transfer the payment of pay and allowances, which was carried on by the Training Branch, to the Accounts and Audit Branch, the control of vocational stores and equipment, which had formerly been the responsibility of the District Vocational Officer, to the Administration Branch, and the Vocational Medical Advisers to the staff of the Treatment Branch, which is now responsible for all medical work carried on by the department.

The Training Branch is now divided into three main divisions:—

1. Training and Inspection.
2. Employment and After-care.
3. Loans.

The administrative head of the Training Branch at head office is the Director of Vocational Training.

The country is divided into districts corresponding very closely to the military districts, the administrative head of each district being the District Vocational Officer.

The organization in each district is similar to that at head office, with the head of each division responsible to the District Vocational Officer.

ADDITIONAL PROVISION.

While there has been no great change in the general policy of the branch, during the past year, additional provisions have been made. These are as follows:—

(1) Limitation of time in which applications for retraining could be made.

(2) Payment of pay and allowances to men who commenced training pending approval.

(3) Opening of special workshops for the care of functionally, neurologically and mentally sub-normal men.

(4) Extension of period of training by payment of difference between wages received from employers and the amount of pay and allowances granted by the department.

(5) Payment of compensation to students on strength of the department who are injured during training.

(6) Increase of pay and allowances.

These additional provisions were put into effect during the year. A brief description of each of these is given below.

LIMITATION OF TIME IN WHICH APPLICATION FOR RETRAINING COULD BE MADE.

This was set at January 31, for all men discharged prior to November 1, 1919, or three months from date of discharge or completion of treatment, for men discharged subsequent to November 1, 1919.*

The number of applications for retraining, made during the latter part of 1919 and January of 1920, was so large that it was impossible to deal with all of them immediately, and it was found necessary to postpone the consideration of applications until arrangements could be made to have applicants appear before the Disabled Soldiers Training Boards. This was done by appointment, as fast as they could be handled.

The number of applications which had not been dealt with, when this regulation came into effect, on February 1, 1920, was 9,873.

* See Order in Council P.C. 2131, 1919—Annual Report for 1919, Appendix XI, page 156

In order to provide training for these large numbers, the facilities of the department were taxed to the utmost, and it was only owing to the fact that through industrial surveys, the officers of the department were in touch with openings for training in industries, that the department was able without delay to provide training for all these men.

During the year cases have arisen, of men who, though disabled, did not apply for training within the time limit set, but endeavoured to re-establish themselves in their former occupation, or some other occupation, without the assistance of the department. Some of these men found that owing to their disability they were compelled to give up their work and apply for vocational training. Consideration has been given to these applications, and when, on investigation, it has been found that the man had made a bona fide effort to re-establish himself, and had failed because of his disability, retraining has been granted.

PAYMENT OF PAY AND ALLOWANCES TO MEN WHO COMMENCED TRAINING PENDING APPROVAL*

This provision was necessary owing to the difficulty and delay experienced in obtaining medical documents, especially where applications for retraining were made in a district other than that in which the applicant was discharged. Before authorization for training could be given, it was essential to establish the fact that the disability of which the man complained, was due to or aggravated by war service, and in order to ascertain this, in many cases, it was necessary to have his medical history sheet. Under the new provision it is possible to start a man in training as soon as the local board decides to recommend him for a course, and should it be found later, that he is not eligible, payment of allowances can be made from the time that he started, until the receipt of advice in the Unit, that he is not eligible. This cause of delay has now, to a large extent been eliminated, and in very few cases is it now necessary to take advantage of this provision.

OPENING OF SPECIAL WORKSHOPS FOR CARE OF FUNCTIONALLY, NEUROLOGICALLY AND MENTALLY SUB-NORMAL MEN

From reports received, it became apparent to the department that there were a number of disabled men who, while not requiring further medical treatment, could not, on account of their disability, be trained or were physically unable successfully to support themselves, under existing provisions. In many of these cases the disability was only partially due to service and therefore they were only in receipt of a small pension. What to do with such cases became a new problem, and it was not until P.C. 2328 was passed in November, 1919,† that provision existed for taking care of this class of men.

Under the above-mentioned Order in Council the department was authorized to grant assistance to such men, pending a thorough investigation into the problem. In order to provide a place other than a hospital where light occupation, combined with medical care could be given and with a view to ascertaining if, under careful supervision, and proper working conditions, some of these men could be restored to normal health, and made fit to resume their place in industrial life, or failing this, to find out to what extent they would be capable of useful work, workshops were started in various centres. The occupations followed are such as can be readily undertaken by the types of cases dealt with, and include such work as basketry, toy-making, reed furniture making, light metalwork and woodwork. In some cases the men are allowed to work at home, at weaving, basketry, etc., but are subject to regular supervision. An effort is made to transfer such men as are fit, to actual employment, as soon as possible. In some cases light employment has been found for them and their pay supplemented by the department.

* See Order in Council P.C. 2327, Appendix XVIII, page 167, Annual Report, 1919.
† See Appendix XVI, Annual Report for 1919, page 165.

Of the 378 number of men who have been admitted to workshops 67 have been placed in actual employment full time; 8 have been placed in actual employment with pay supplemented by the department; 78 have returned to hospital for treatment; 144 are still in workshops.

EXTENSION OF PERIOD OF TRAINING BY PAYMENT OF DIFFERENCE BETWEEN WAGES RECEIVED FROM EMPLOYERS AND THE AMOUNT OF PAY AND ALLOWANCES GRANTED BY THE DEPARTMENT*

This provision enables the department to take into consideration the amount of money paid to a student by the employer, and so grade the pay and allowances made by the department, that a course can be extended over a much longer period than would otherwise be the case. Advantage of this provision has not been taken, to any great extent, as it has been found that men in training, are anxious to complete and get on to the payroll of the employer, as soon as possible.

PAYMENT OF COMPENSATION TO STUDENTS ON STRENGTH OF THE DEPARTMENT WHO ARE INJURED DURING TRAINING

Several cases of injury, while in training with the department, occurred, and as the students were either training in workshops operated by the department, or in industrial plants, and paid by the department, they did not come within the provisions of the Provincial Workmen's Compensation Act.

In December, 1919, an Order in Council was passed,† bringing students in training with the department, within the scope of the Statutes of Canada, 1918, chapter 15, which provides for compensation for Government employees who are injured in the course of their work.

Acting on this authority, arrangements were made with the various Provincial Workmen's Compensation Boards, to deal with the claims arising from injuries to students, and to award compensation in accordance with local Workmen's Compensation Board regulations.

When injury occurs to a student in training, the District Vocational Officer immediately refers the case to the local Workmen's Compensation Board, which examines into the case, assesses compensation, and makes payment of the amount assessed. This payment is made out of a fund provided by the Finance Department of the Dominion Government, for this purpose.

The number of cases of injury which have been dealt with in this way, to date is 30, of which 19 have been paid in full and the balance as shown hereunder.

SUMMARY OF MEN WHO HAVE BEEN GRANTED COMPENSATION

19	men granted a total sum of $4,169.85 being settlement in full.
1	man granted total of $150 plus $12.50 per month for life.
1	man granted total of $75 plus $8 per month for life.
1	man granted total of $200 plus $10.72 per week (time not stated).
1	man granted total of $100 plus $9 per month (time not stated).
1	man granted $9.90 per month for life.
1	widow granted $40 per month for life. Child granted $10 per month for life.
1	man granted $54.45 for five months being settlement in full.
1	man granted $35 (time not known).
1	man granted $31.97 (time not known).
1	man granted $18.72 (time not known).
1	man (not yet decided).
30	

* See Appendix IV, page 153.
† See Appendix V, page 154.

INCREASE OF PAY AND ALLOWANCES*

The Parliamentary Committee on Pensions and Re-establishment, which presented its report to the last session of Parliament, received a large amount of evidence regarding the pay and allowances of men undergoing vocational training, and the following recommendation was submitted to Parliament, that the rates payable to men undergoing vocational training should be increased to the amounts recommended in the Pension Bill, for privates and their dependents. This was put into effect and the increase in pay and allowances made as from the 1st September, is shown as follows:—

	Rate prior to September 1	Rate from September 1
Single men without dependents	$60 00	$ 75 00
Single men with partial dependents	up to 85 00	up to 100 00
Married men—		
Man and wife	85 00	100 00
First child	10 00	15 00
Second child	8 00	12 00
Third child	7 00	10 00
Fourth and over	6 00 each	10 00 each
Widowers—		
Widower with one child	80 00	95 00
" " two children	88 00	105 00
" " three children	95 00	115 00
" " four children and over	extra 6 00 each child	extra 10 00 each child
Single men with totally dependent parents, brothers and sisters—Man	60 00	75 00
One dependent	25 00	25 00
Two dependents	35 00	40 00
Three dependents	43 00	52 00
Four dependents	50 00	62 00
Over four dependents	extra 6 00 each	extra 10 00 each
Orphan brother or sister	20 00	20 00
Two orphan brothers or sisters	28 00	30 00
Three orphan brothers or sisters	35 00	40 00
More than three brothers or sisters	extra 6 00 each	extra 10 00 each

TRAINING AND INSPECTION DIVISION

Training

There are two classes of ex-soldiers for whom training has been provided:—

(1) Those that have incurred a disability which prevents them from following their former occupation.

(2) Those who enlisted under the age of 18 years and suffered a severe interruption to their training.

Four methods of training have been adopted by the department:—

(1) Inside schools. (Schools operated by the department.)

(2) Outside schools. (Business colleges and other educational institutions.)

(3) Industries.

(4) A combination of school and industry.

These methods have been used for training both of the above-mentioned classes of ex-soldiers, but the percentage of minors trained in industry is much larger than in the case of the disabled.

The number of men trained and graduated during the past year has been very large and during the early part of the year the department was taxed to the utmost to provide facilities for training. The following table shows the number of new men taken on

* See Appendix I, pp. 136-139.

for training and the total number in training, month by month during 1920. It will be noted that the peak of the load was reached in February:—

ENROLMENTS, 1920

Month	New Students	Total Number in Training
January	2,943	25,254
February	2,552	26,022
March	2,657	25,673
April	1,483	23,276
May	1,017	19,648
June	751	16,219
July	494	12,588
August	355	10,156
September	446	8,290
October	452	6,768
November	379	5,518
December	477	4,714

The number of men in training on December 31, 1919, was 22,437, divided as follows:—

Inside schools	6,733 or 30·01%
Outside schools	5,553 or 24·75%
Industries	10,151 or 45·24%

On December 31, 1920, the number on the strength of the department had decreased to 4,714, divided as follows:—

Inside schools	673 or 14·28%
Outside schools	1,208 or 25·62%
Industries	2,833 or 60·10%

These figures show a decrease of 15·13 per cent in the number of students training in inside schools, an increase of ·87 per cent training in outside schools, and an increase of 14·86 per cent training in industries.

With the falling-off of students there has been a corresponding decrease in departmental classes and instructors.

On the 31st of December, 1919, there were 51 departmental schools, and on the 31st of December, 1920, only 16, while the number of instructors has fallen from 556 to 92. The unit details will be found in the following table:—

Unit.	1919.			1920.		
	No. of Schools.	No. of Students.	No. of Instructors.	No. of Schools.	No. of Students.	No. of Instructors.
"A"	6	897	60	2	61	12
"B"	6	566	58	4	124	25
"C"	2	955	68	1	85	9
"D"	12	1,449	113	2	64	8
"F"	3	207	25			0
"G"	5	798	52	1	30	4
"H"	2	221	8			0
"I"	3	766	53			0
"J"	11	802	106	5	302	33
"K"	1	112	13	1	7	1
Totals	51	6,773	556	16	673	92

The prevailing industrial depression has affected the facilities for industrial training, and some difficulty has been experienced in obtaining training for men in certain occupations. In a few cases men have had to be transferred, owing to closure or strikes, to other training or to schools.

The total number of men who commenced training under the department up to December 31, 1920, is 50,521. Of this number 12,961, or 25·66 per cent, received

their training in departmental schools, 8,180 or 16·19 per cent in outside schools, and 20,399 or 40·38 per cent in industries. The number who discontinued their training is 8,981 or 17·77 per cent of the total number that commenced.

The average length of a course in the various districts or units was 6·78 months during the year 1919, but in 1920 it rose to 7·92 months, and the number of extensions of courses rose from 3,601 in 1919 to 6,524 in 1920.

The figures for the individual units are given below:—

Unit	Average length of Course, 1919	Average length of Course, 1920
A	7·41 months	8·48 months
B	7·69 "	8·49 "
C	5·22 "	8·18 "
D	6·88 "	7·99 "
F	6·33 "	8·22 "
G	8·16 "	7·89 "
H	5·49 "	6·70 "
I	6·72 "	7·30 "
J	6·67 "	7·95 "
K	7·21 "	8·06 "
Total	6·78 months	7·92 months

The type of training given can be divided into five main groups: Corrective, Trade and Industrial, Business or Commercial, Agriculture and Professional. The number of men trained in each of these groups is as follows:—

Group	Number of Students	Per cent
1. Corrective Training	57	0·14
2. Trade and Industrial Training	23,781	57·25
3. Business and Commercial Training	11,904	28·66
4. Agricultural Training	2,558	6·16
5. Professional Training	3,240	7·79
Total	41,540	100·00
Course discontinued	8,981	
Grand total (of men who have taken training)	50,521	

The total number of men who discontinued their training course is 8,981. A record of the reasons given for discontinuance of training has been kept, the particulars being as follows:—

	Per cent
Voluntary: To take positions	28·46
Deceased	1·93
Sick	7·40
Gone abroad	7·93
Dissatisfied with allowances	1·48
Domestic reasons	1·05
Harvesting	·59
To go on land	2·85
To study elsewhere	·21
No information	3·80
Re-enlistment	1·02
On strength of P.C. 2328	1·04
Cancelled: Misconduct or non-attendance	24·38
Lack of interest	16·56
Misrepresentation in Federal Emergency Fund	1·36
Total	100·00

Of the 8,981 who discontinued, 3,270, or over 36 per cent, were minors who discontinued their training and took work offering greater remuneration than the pay and allowances given by the department.

Graduates.—The number of men who had gradnated on December 31, 1919, was 9,455. During the year 1920, the number that graduated was 27,371, bringing the total graduates on December 31, 1920, to 36,826.

The following tables show by units the method of training used. It will be noted that a much larger percentage of the number who graduated in 1920 were trained in industry.

NUMBER OF GRADUATES DECEMBER 31, 1919.

Unit.	Inside Schools.		Outside Schools.		Industries.		Total.
	No.	%	No.	%	No.	%	
"A"	653	67·88	57	5·93	252	26·19	962
"B"	262	60·93	78	18·14	90	20·93	430
"C"	600	79·24	71	9·53	85	11·23	756
"D"	1,350	45·86	412	13·99	1,182	40·15	2,944
"E"	157	30·37	148	28·62	212	41·01	517
"G"	790	76·04	120	11·55	129	12·41	1,039
"H"	391	69·95	71	12·69	97	17·36	559
"I"	808	76·44	134	12·68	115	10·88	1,057
"J"	550	56·53	205	21·07	218	22·40	973
"K"	122	55·96	49	22·48	47	21·56	218
Total	5,683	60·11	1,345	14·23	2,427	25·66	9,455

NUMBER OF GRADUATES DECEMBER 31, 1920.

Unit.	Inside Schools.		Outside Schools.		Industries.		Total.
	No.	%	No.	%	No.	%	
"A"	1,280	35·56	607	16·86	1,713	47·58	3,600
"B"	478	19·73	540	22·29	1,405	57·98	2,423
"C" Ottawa	988	57·01	87	5·02	658	37·97	1,733
Kingston	629	54·74	274	23·85	246	20·40	1,149
Peterboro'	6	1·20	78	15·54	418	83·26	502
"D" Hamilton	447	19·59	189	8·28	1,646	72·13	2,282
Toronto	2,727	25·56	2,392	22·42	5,549	52·02	10,668
"E" Guelph	74	6·35	389	33·42	701	60·23	1,164
London	222	22·89	143	14·74	605	52·37	970
"G"	1,592	49·46	615	19·10	1,012	31·44	3,219
"H"	523	37·85	290	20·98	569	41·17	1,382
"I"	1,588	55·22	507	17·63	781	27·15	2,876
"J"	1,533	44·89	535	15·67	1,347	39·44	3,415
"K"	201	13·93	326	22·59	916	63·48	1,443
Total	12,288	33·37	6,972	18·93	17,566	47·70	36,826

The policy of the department in providing retraining to as great an extent as possible in actual industries rather than in departmental schools is still continued, and experience has shown that a greater percentage of the men so trained follow the line of their training.

A comparison is made in the following table of the results obtained from the three methods of training used by the department. This shows that 66·01 per cent of the number trained in departmental schools, 79·36 of those trained in outside schools and 73·19 of those trained in industries are employed in the line of work for which they were trained. It should be stated, however, that many of those who completed their training in industries took part of their training in inside schools. While the percentages of the inside schools and industrial establishments appear to show to disadvantage as compared with the percentage for those trained in

outside schools, it should be noted that of the total number of graduates on December 31, 1920, only 18·93 per cent were trained in outside schools, and that the greater number of these were university students or those who took business courses, so that the actual number of men following the occupations for which they have been trained in industrial establishments is largely in excess of the actual number trained in outside schools. Further, in arriving at the percentage of the latter, the policy of the department in respect of students must be considered. These men, if eligible for training, and desiring to commence or continue a university or technical course, are given training for one academic year at the expense of the department, the second or subsequent years being arranged by themselves. The follow-up returns, therefore, show that four months after the completion of the return for which the department has accepted responsibility the men are following their line of training. Judged from the standpoint of permanent re-establishment the percentage under the heading of Industrial Establishments shows that this method of training has been the most satisfactory of all methods employed.

Unit	Inside Schools	Outside Schools	Industrial Establishments
A	61·89	62·56	69·20
B	75·25	96·01	85·91
C	61·83	86·37	79·94
D	57·19	79·38	67·13
F	66·27	67·30	68·56
G	60·99	81·42	77·11
H	78·57	87·21	88·67
I	74·82	82·28	87·73
J	75·25	73·61	73·61
K	72·50	84·47	79·37
Average	66·01	79·36	73·17

The number of occupations in which the department has trained men is 421. These occupations are grouped as follows:—

Corrective Training—the number of courses being	3
Trade and Industrial Training—the number of trades and occupations being	292
Agricultural Training—the number of distinct courses being	24
Business and Commercial Training—the number of separate and distinct lines of training being	43
Professional Education—the number of separate and distinct lines of training being	59
Total	421

STATEMENT showing number of men who have taken vocational training up to December 31, 1920, exclusive of those who discontinued training. Classified according to Industrial and Professional Groups.

Courses under Groups	Grand Total	Per cent
1. Corrective Training	57	0·14
2. Trade and Industrial Training—		
1. Building trades	1,300	3·13
2. Electric trades	2,854	6·87
3. Mechanical trades	6,980	16·80
4. Metal trades	1,083	2·61
5. Garment and leather trades	3,613	8·70
6. Manufacturing pursuits	396	0·95
7. Crafts	720	1·73
8. Woodworking and finishing	1,754	4·22
9. Food preparation	439	1·06
10. Textile work	150	0·36
11. Repair work	854	2·06
12. Miscellaneous trades	3,638	8·76
Sub total	23,781	57·25

Courses under Groups	Grand Total	Per cent
3. Business and Commercial Training—		
1. Administrative positions	1,785	4·30
2. Subordinate positions	8,380	20·17
3. Commercial facilities	1,739	4·19
Sub total	11,904	28·66
4. Agricultural Training—		
1. General farming	910	2·19
2. Farm crops and gardening	480	1·16
3. Farm animals	993	2·39
4. Forestry	174	0·41
5. Fisheries	1	0·01
Sub total	2,558	6·16
5. Professional Training—		
1. Engineering	1,108	2·66
2. Medical	772	1·85
3. Artistic	580	1·40
4. Other professions	780	1·88
Sub total	3,240	7·79
Grand total	41,540	100·00

NOTE.—Corrective training means training given primarily for functional purposes, and includes such training as lip reading, Braille and the correction of stammering.

The following statement gives the details as to the different occupations for which training has been provided:—

CORRECTIVE TRAINING

1. Braille
2. Correction of stammering
3. Lip reading

TRADE AND INDUSTRIAL TRAINING

1. BUILDING TRADE

1. Bricklaying
2. Building construction
3. Building inspection
4. Carpentry
5. Cement and steel testing
6. Concrete construction
7. Furnace and stove installation
8. Gas stove fitting
9. Interior decorating and painting
10. Marble trimming
11. Plastering
12. Plumbing.
13. Ship fitting.
14. Steamfitting
15. Steel worker
16. Stone cutting
17. Structural steel work
18. Tile setting

2. ELECTRIC TRADE

1. Armature winding
2. Battery work
3. Coil winding
4. Coremaking
5. Draughting, electrical
6. Dynamo work
7. Electric appliance testing
8. Electricity applied
9. Electrical construction
10. Electric motor assembling
11. Electric meter assembling
12. Electric plating
13. Electric fixture making
14. Electric wiring
15. Electrotyping
16. Electrical installation and inspection
17. Machinist, electric and repairs
18. Magneto work
19. Meter repair and testing
20. Sub-station operating electricity
21. Switchboard installation telephone
22. Telephone installation and repairing
23. Telephone linesman
24. Transformer assembling

3. Mechanical Trades

1. Air brake mechanics
2. Art lead glazing
3. Auto mechanics
4. Auto truck assembling
5. Auto top and body upholstering
6. Cable testing and splicing
7. Carriage building and repairs
8. Chauffeur
9. Drill press operating
10. Farm implement assembling
11. Farm mechanics
12. Farm tractor operating
13. File cutting
14. Lathe hand
15. Machine shop practice
16. Machinist
17. Machine tool making
18. Machine tool operating
19. Millwright
20. Motor assembling
21. Motorcycle assembling and repairs
22. Sawyer
23. Stationary steam engineering
24. Tool making and repairing
25. Valve board operator
26. X-ray operator
27. Machinist and tool maker
28. Belt conveyor attendant
29. Crude oil engine operater
30. Fitting and assembling shoe machinery

4. Metal Trades

1. Blacksmith
2. Boiler making and fitting
3. Brass bed assembling
4. Brass moulding
5. Brass finishing
6. Bronze moulding
7. Die sinking
8. Electric welding
9. Gas fixture making
10. Gilding
11. Iron moulding
12. Lead letter making
13. Locksmith
14. Metal polishing
15. Metal spinning
16. Ornamental iron work
17. Oxy-acetylene welding
18. Pattern making
19. Press stamping
20. Saw filing
21. Sheet metal work
22. Steel stamping
23. Tinsmithing
24. Wire working

5. Garment and Leather Work

1. Cap making
2. Cleaning and pressing
3. Furrier
4. Garment cutting
5. Garment design
6. Garment making
7. Glove making
8. Hat making
9. Harness making and repairing
10. Last making
11. Leather work
12. Moccasin making
13. Orthopædic shoe making
14. Shoe machie operating
14. Shoe machine operating
16. Tailoring
17. Trunk and valise making

6. Manufacturing Pursuits

1. Aerated water manufacturing
2. Art novelty manufacturing
3. Asbestos manufacturing
4. Basket making
5. Boat building
6. Brick making
7. Brush making
8. Burglar alarm manufacturing
9. Celluloid industry
10. Electro switchboard manufacturing
11. Gold pen making
12. Golf accessories
13. Ink making
14. Mattress making
15. Paper box making
16. Photographic supplies
17. Picture frame making
18. Pipe making
19. Pulp and paper manufacturing
20. Radiography
21. Rope and twine making
22. Rubber goods making
23. Rubber tire building
24. Rubber boot making
25. Sail making
26. Silvering mirrors
27. Skewer manufacturing
28. Spring bed making
29. Spoon making
30. Stove making
31. Sugar refining
32. Tent and awning making
33. Tire manufacturing
34. Toy manufacturing
35. Watch case making

7. Crafts

1. Dental mechanics
2. Engraving
3. Goldsmith
4. Gunsmith
5. Jewellery making and repairing
6. Lens grinding
7. Optical instrument making
8. Photo engraving
9. Pottery work
10. Ring making
11. Silvering and plating
12. Soldering
13. Stone engraving
14. Surgical appliances manufacturing
15. Template making
16. Watch and clock repairs

8. Wood Working and Wood Finishing Trades

1. Artificial limb making
2. Auto painting
3. Cabinet making
4. Casket making
5. Carriage painting
6. Coopering
7. French polishing
8. Furniture design and assembling
9. Machine floor finishing
10. Machine wood working
11. Phonograph cabinet making
12. Piano part making
13. Reed working
14. Rule graduation
15. Sash and door making
16. Wheelwright
17. Wood finishing
18. Wood working

9. Food Preparations

1. Baking
2. Butchering
3. Chef
4. Cocoa roasting
5. Confectioner
6. Egg candling
7. Flour milling
8. Meat cutting
9. Milk inspection
10. Oleomargarine manufacturing
11. Refrigerator attendant
12. Tea blending and testing
13. Vinegar making and malt milling
14. Meat curing
15. Pickle making
16. Meat inspection

10. Textile Work

1. Carpet making
2. Cloth inspection
3. Cotton spinning
4. Dyeing
5. Flax spinning
6. Mule fixer
7. Textile work
8. Weaving
9. Wool carding
10. Wool finishing

11. Repair Work

1. Adding machine repairs
2. Auto top and body repairs
3. Bicycle repairs
4. Billiard table repairs
5. Camera assembling
6. Machine repairs
7. Musical instrument repairs
8. Nautical instrument repairs
9. Phonograph repairs
10. Piano tuning and repairs
11. Scale assembling and repairs
12. Sewing machine adjusting and repairs
13. Typewriter repairs
14. Umbrella repairs
15. Vulcanizing

12. Miscellaneous Trades and Occupations.

1. Ammonia plant operating
2. Barbering
3. Book binding
4. Canning
5. Cash register assembling
6. Cigar making
7. Commercial compositing
8. Dictaphone operating
9. Draughting, architectural
10. Draughting, mechanical
11. Draughting, ships
12. Draughting, structural steel
13. Elevator operating
14. Engineering fire prevention
15. Estimating and plan reading
16. Floral design
17. Florist
18. Fox farming
19. Gas engine assembling
20. Gas generating
21. Gas meter reading and assembling
22. Glass cutting
23. Glass blowing
24. Grocery business
25. Heating plant operating
26. Hunting and trapping
27. Janitors (superintendent of building)
28. Lamp trimming
29. Laundry
30. Linoleum and carpet laying
31. Linotype operator
32. Lithography
33. Locomotive engineer
34. Machine design
35. Mining
36. Monotypist
37. Monotype casting
38. Mosaic work
39. Motion picture operator
40. Motion picture photography
41. Motorman.
42. Knitting machine operator
43. Multigraph operator
44. Multicolour press work
45. Nickel plating
46. Phonograph record making
47. Printing
48. Portrait painting
49. Railway track supervisor
50. Railway traffic manager
51. Railway baggageman
52. Safety razor assembling
53. Show card writing
54. Sign painting
55. Sign writing
56. Time keeping
57. Toll gate attendant
58. Undertaking
59. Upholstering
60. Vacuum cleaner assembling
61. Watchman
62. Wax modelling
63. Well drilling
64. Wig making
65. Window dressing
66. Road building
67. Taxidermy
68. Monumental estimating
69. Office supplies and manufacturing

BUSINESS AND COMMERCIAL TRAINING

1. Administrative Positions

1. Accountancy
2. Advertising
3. Auctioneer
4. Car inspector
5. Cemetery management
6. Collender foreman
7. Efficiency expert
8. Finance trade and commerce
9. Fire underwriter and insurance
10. Food inspection
11. Hotel management
12. Insurance
13. Investigation
14. Librarian
15. Lumber yard management
16. Marine underwriter
17. Municipal secretary
18. Purchasing agent
19. Roofing supervision
20. Sanitary inspection
21. Salesmanship
22. Social service secretary
23. Special business course
24. Steward
25. Traffic management

2. Subordinate Positions

1. Book-keeping
2. Civil service
3. Clerical work
4. Commercial
5. Comptometer operating
6. Cost production
7. Languages
8. Mathematics, practical
9. Matriculation
10. Shipping clerk
11. Stenography
12. Stock-keeping
13. General education

3. Commercial Facilities

1. Navigation
2. Telegraphy
3. Telegraphy, railway and station
4. Telegraphy, wireless
5. Cable telegraphy

AGRICULTURAL TRAINING

1. General Farming

1. Agriculture

2. Farm Crop and Gardening Course

1. Floriculture
2. Fruit farming
3. Gardening, market
4. Grain buying and inspection
5. Horticulture
6. Landscape gardening
7. Seed sorting, grading and testing
8. Farm drainage

3. Farm Animal Course

1. Animal husbandry
2. Bee-keeping
3. Dairying
4. Hog raising
5. Rodentarian
6. Poultry raising
7. Stock raising
8. Poultry and gardening
9. Poultry and dairying
10. Poultry and hog raising
11. Live stock inspection.

4. Forestry

1. Forestry
2. Log scaling and culling
3. Lumber grading and surveying

5. Fisheries

1. Oil extraction from fish

PROFESSIONAL EDUCATION

1. Engineering

1. Assaying and milling
2. Chemistry
3. Chemical engineer
4. Civil engineer
5. Engineering, gas and steam
6. Engineering, electrical
7. Engineering, marine
8. Engineering, mechanical
9. Engineering, mining
10. Highway construction
11. Laboratory work
12. Metallurgy
13. Oil technology
14. Power plant engineering
15. Science, applied
16. Surveying

2. Medical

1. Anaesthetics
2. Chiropody
3. Dentistry
4. Dental nursing
5. Drug clerk
6. Embalming
7. Masseurs
8. Mano therapy
9. Medicine
10. Dietitian
11. Optometry
12. Pathology
13. Pharmacy
14. Public health nursing
15. Technician (X-ray)
16. Veterinary

3. Artistic

1. Art and design
2. Art flower decorating
3. Cartooning
4. Commercial art
5. Commercial illustrating
6. Commercial modelling
7. Dancing
8. Dramatic art
9. Motion picture acting
10. Music
11. Photography
12. Sculpture
13. Portrait painting

4. Other Professional Courses

1. Architecture
2. Arts
3. Bacteriology
4. Biology
5. Economics
6. Journalism
7. Law
8. Manual training
8. Mineralogy
10. Physical training
11. Political science
12. Teacher's course
13. Theology
14. Commerce

MINORS

The number of minors to whom courses were granted is 11,574. Of this number 3,270 discontinued and 620 were in training on the 31st December, 1920 as follows:—

Inside schools	58 or 9·36%
Outside schools	138 or 22·26%
Industries	424 or 68·38%

The number of minors who had graduated up to December 31, 1920, is shown by districts:—

	Districts	Graduates
A	Quebec	893
B	Nova Scotia	760
C	Ottawa	432
	Kingston	223
	Peterboro	115
D	Toronto	1,756
	Hamilton	622
F	London	183
	Guelph	169
G	Manitoba	712
H	Saskatchewan	260
I	Alberta	424
J	British Columbia	673
K	New Brunswick	462
	Total	7,684

EX-IMPERIALS

Ex-Imperials who were resident in Canada at the outbreak of the great war are eligible for re-training, with pay and allowances, under the regulations governing ex-members of the Canadian forces. The figures with reference to such men are given here, together with a statement showing the number of men who are receiving their training in the United States. In most cases these are men who were domiciled in the United States before joining the Canadian forces.

EX-IMPERIALS—RESIDENTS OF CANADA ON OUTBREAK OF WAR

Unit	Commenced	Current	Suspended	Discontinued	Completed
A	85	11	2	13	59
B	18	8	..	1	9
C	54	8	..	5	41
D	359	71	4	36	248
F	34	10	1	6	17
G	63	7	1	16	39
H	15	2	..	1	12
I	56	6	..	8	42
J	155	56	1	13	85
K	15	4	..	1	10
Total	854	183	9	100	562

EX-IMPERIALS—NOT RESIDENTS OF CANADA ON OUTBREAK OF WAR

Unit	Commenced	Current	Discontinued	Completed
A	30	7	8	15
B	5	1	1	3
C	14	4	2	8
D	67	9	15	43
F	7	1	1	5
G	15	..	3	12
H	6	..	1	5
I	5	..	2	3
J	33	11	8	14
K	3	1	2	..
Total	185	34	43	108

STATEMENT SHOWING NUMBER OF MEN TRAINED IN UNITED STATES

Unit	Commenced	Current	Discontinued	Completed
A	5	3	..	2
B	12	7	..	5
C	2	..	..	2
D	19	2	2	15
F	4	..	1	3
G	3	..	..	3
H	2	1	..	1
I	2	..	..	2
J	6	3	..	3
K	1	..	..	1
Total	56	16	3	37

RE-TRAINING OF EX-MEMBERS OF THE CANADIAN FORCES DISCHARGED IN ENGLAND

The department has an office at 103 Oxford street, London, W., England, under the direction of Major C. G. Arthur, D.S.O., and arrangements have been made to take care of ex-members of the forces discharged in England who are eligible for the benefits of retraining under Canadian regulations.

2. The total number of applications received to date is 272, and 90 men were taking courses on the 31st of December, 1920, while 21 had completed.

INSPECTION

Men, while in training, are under regular supervision by a staff of visiting inspectors, whose duties are to see that they are receiving the approved training, to investigate all complaints, to make regular reports on the men's progress, to take cognizance of the conditions under which they are working in industries, to recommend changes of training courses in such cases as may appear to be desirable, and

to recommend extensions of courses when, for any reason other than negligence on the part of the men concerned, they have not reached that degree of efficiency needed to enable them to become self-supporting by following the occupation for which they are being trained.

It will be seen that the importance of the duties of the inspectors can scarcely be over-estimated. The object of the department's efforts in the re-establishment of the disabled man depends largely upon the honesty, judgment and tact of the inspectors, and the thoroughness and unfailing regularity and frequency of the inspection. That the work has been well done is shown by the fact that of the men who have completed their training and are no longer being reported on by the department, 72 per cent are following the lines of their training.

Medical inspection is also provided for, and medical attention, on full pay and allowances, is given to every man needing it, on the recommendation of the medical officers, who are solely responsible for deciding when a man is not in a fit condition to work. The periods of training are automatically extended to cover any loss of time caused by sickness, provided the absence was approved by the medical officers concerned. In a few cases when the sickness is likely to be for a long period the men are temporarily struck off the strength and taken on the strength of the Treatment Branch for treatment, with pay and allowances, and when fit to resume training are allowed to do so on vocational pay and allowances, or new courses are provided should their physical condition warrant such action and the men concerned desire such changes.

The retraining policy of the department has been, and is, very elastic. There is a minimum of rules and regulations. The training is not restricted to certain fixed courses, a man's choice is only limited by his disability and the occupations to be found in Canada, and no reasonable expense is spared to provide every man with the best possible training.

No report on the work of this branch would be complete that did not refer to the co-operation of employers of labour, and the success which has been obtained by the department in the work of re-establishment is largely due to this assistance, in fact it could not have been accomplished without it. Employers have readily taken men into their places of business, frequently with some dislocation of their routine, taught them, often provided them with a monetary stimulus, and give them work on the completion of training. That the benefit in the majority of instances is mutual does not lessen the debt of the department to those who, by their generous and ready acknowledgment of the obligation which they owe, with Canada as a whole, to the returned man, have so materially assisted him in his return to civil life.

The number of industrial establishments in which men have been placed for their training is 10,604, and the number of graduates from these establishments 17,566, or an average of 1·66 men to a shop.

Care of the Blind

The retraining of blinded soldiers is one of intense interest and many possibilities.

The loss of sight, our most prized and highly developed sense, is, from a mechanical point of view, an irreparable one. A man who has lost an arm or a leg may be provided with a substitute, which, to a certain extent, takes the place of the missing member; once, however, the sight has been destroyed, no artificial substitute is possible. It but remains for other organs and senses to supply the loss. The training for the non-sighted man must be, therefore, of such a character as will enable him to adjust himself to the new condition and to develop to the greatest extent the senses of touch and hearing, he must learn "How to be blind." His thoughts must be drawn away from the mental picture which first presents itself, that of the blind

mendicant at the street corner. He must be taught to feel that in spite of his handicap a life of work and achievement is still open to him, and that the hand stretched out to him is not that of charity, but of encouragement and assistance towards his goal—independence.

Blinded soldiers formed a very small percentage of the casualties of the Great War. It was not until some four months after the beginning of the war that the necessity for their re-education became apparent even in Great Britain.

All arrangements for such training were very wisely left in the hands of Sir Arthur Pearson, himself totally blind, and St. Dunstan's came into being. At that time training of this nature had not been given special consideration in Canada, and our men, as soon as they had left hospital, were, with some exceptions, admitted to St. Dunstan's; these exceptions being those who did not wish to take training there, or whose eyesight at that time did not appear sufficiently impaired to warrant it. These received training at a later date in Canada.

In the summer of 1918, the policy was adopted by this department whereby all blinded Canadian soldiers, who wished to do so, might enter St. Dunstan's for instruction.

In order that the training in Canada might be established on a firmer and more up-to-date basis, the department secured the services of Captain E. A. Baker, M.C., Croix de Guerre. Captain Baker was the first Canadian officer graduate of St. Dunstan's, and a brilliant example of what can be accomplished by the methods instituted at that place. For the first two years after his return to Canada, he acted as "trouble manager" with the Hydro-Electric Power Commission of Ontario. He entered upon his new duties with the department on August 1, 1918. On October 1, 1920, Captain Baker assumed the position of general secretary to the Canadian National Institute for the Blind; he is, however, still on the strength of this department in an advisory capacity.

Training.—Training begins with a preliminary course—the man is taught Braille reading and writing, typewriting and certain handicrafts. While taking this course his capabilities, both mental and physical, are observed, and after consultation with the man himself regarding his desires, his vocation for the future is decided upon and the training towards this end commenced.

At the commencement of his training he is presented with a Braille watch—a blinded man who can tell the time of day or night has taken the first step towards independence. Upon completion of training, provided that he can successfully operate same, a Braille writing machine and typewriter are also presented, and, where necessary, certain equipment to enable him to set up in his chosen business or profession.

When training for the non-sighted was first undertaken in Canada such facilities as were provided by the Canadian National Institute for the Blind, the Montreal Association for the Blind, the Nazareth School for the Blind, Montreal, and the Halifax School for the Blind, were utilized. Arrangements were also made with the Nova Scotia Technical College, Halifax; Military School of Orthopædics, Surgery and Physio-therapy, Hart House, Toronto; and the Ontario Agricultural College, Guelph, for other courses not included in the curricula of the above-mentioned training institutions for the blind.

Of late there have been certain changes in these arrangements, the greater part of the instruction being given at Pearson Hall, the Blinded Soldiers' Department of the Canadian National Institute for the Blind. The hall is a fine old family mansion situated at No. 186 Beverley street, Toronto, and is used as a place of residence by the students. New and commodious training quarters were formally opened by His Excellency the Governor General on November 10, 1920. Among the numerous courses given here is massage. The instructor is a totally blind ex-soldier, trained at St. Dunstan's, who passed second highest out of a class of three hundred and twenty-seven at the examinations held by the Incorporated Society of Trained Masseurs,

London, England. One of his pupils was the first blind man to pass through the School of Physical Science, McGill; another, the first to take the examinations of the Dominion Massage Association, with a rating of 86 per cent on all subjects.

It may be stated that this association has been lately founded for the protection of all sighted and non-sighted masseuses and masseurs in Canada, also for the purpose of bringing about a close co-operation with the medical profession.

Instruction in poultry farming and carpentry is also given under the Canadian National Institute for the Blind at Preston, the instructor, being an ex-soldier, and totally blind. On graduation, loans are provided by the Soldier Settlement Board, and the men assisted in settling down.

Through the co-operation of various business firms training in certain lines, such as piano-tuning, rubber stock mixing, assembling of motors, has been provided.

Besides training a man for his future vocation, attention is paid to recreation and sports and a fine showing has always been made at the annual sport's day at Pearson Hall. The men are also taught and encouraged to dance; as this makes for free and independent movement; a weekly dance is held at the hall, to which they may invite their relatives and friends.

After-care.—After a man is trained, it then becomes necessary to assist him to settle down in his chosen occupation, and to show him that a keen interest is still being taken in his future welfare. With these ends in view a full and comprehensive system of "after-care" was established by St. Dunstan's in Great Britain. This has been adapted as far as possible to Canadian needs, although in this country the comparatively small number of men and the vast areas through which they are scattered complicates operations to a large extent.

The department has entrusted this work of after-care to the Canadian National Institute for the Blind, through the agency of Pearson Hall, thereby making use of the Dominion-wide organization which the institute has established. Raw materials are supplied to the men at cost price, their manufactured products disposed of, their work inspected and any faults in process or method corrected, in short, they are given any assistance possible that may be needed at the moment.

There are at the head office of the department many interesting records of the successes attained by these men, and accomplishments which, up to a few years ago, would have been looked upon as impossible.

The number of Canadians who are reported to be suffering from blindness and defective eyesight discharged from the Canadian Army and receiving pension for these reasons is 1,966, of whom 192, have lost sufficient sight to require retraining, of these 32 cases are under investigation and it is expected that approximately 13 of them will be able to take retraining. The 192 cases which have been trained, are now under training or under investigation, are classified as follows:—

Loss of both eyes	52
Loss of right eye	39
Loss of left eye	29
Other visual disorders	72
	192

Of this number 110 are totally blind, or possess only a perception of light.

Of 32 cases now under investigation seven have lost the sight of both eyes, five that of the right eye and four of the left, sixteen other visual disorders and of these thirty-two cases, fourteen are totally blind, or possess only a perception of light.

Thirty-three men are undergoing training at the present time, ten being at St. Dunstan's and twenty-three in Canada. The disability of these men is as follows:—

Loss of both eyes	3
Loss of right eye	5
Loss of left eye	5
Other visual disorders	20
	33

Of these 20 are totally blind, or possess only a perception of light.

NOTE.—Owing to more definite information on various cases, a number of men, who in last year's report, were placed in the category covering "visual disorders," have now been included in a specific classification.

The above-mentioned men are undergoing training as follows:—

Massage	4
Poultry farming and carpentry	3
Boots and mats	3
General and preliminary	11
Stenography	1
Vocal	1
Baskets and nets	2
Rattan work	1
Broom-making	4
Electric-motor assembling	1
Law course, university	1
Business course	1
Total	33

The men who have been trained and settled down are disposed of as follows:—

Massage	13
Poultry farming and carpentry	24
Boots and mats	5
Piano tuning	5
Stenography	7
Joinery	2
Baskets and nets	5
Broom-making	3
Telegraphy	1
In business for themselves	13
Wicker work and rattan	3
Returned former occupations	5
General secretary	1
Instructors	4
Market gardening	1
Assembling agricultural motors	1
Employed business firms	8
Mats and nets	3
Unable, unwilling or waiting for employment	19
Deceased	4
Total	127

EMPLOYMENT AND AFTER CARE

GROWTH OF WORK

Until towards the end of 1919, the Employment and Aftercare Division in the units, while it was a definite part of the work, was a comparatively easy task. The energies of the district officers were chiefly directed towards interviewing and caring for students in training which occupied most of their time and thought. There were

few graduates and comparatively plenty of vacancies and it was not a difficult matter to follow up the graduates to find out how they got along and to render whatever assistance was necessary towards their permanent establishment.

The following will give the growth of the work:—

Number of graduates—	
December, 1918	2,285
December, 1919	9,455
December, 1920	36,826

This shows that during 1920, 27,371 completed training.

RESTATEMENT OF POLICY

With the demobilization of the Information and Service Branch and the very large number of men who were graduating it became necessary definitely to establish the policy concerning employment. Up to this time while the Training Branch had assumed responsibility for seeing that graduates obtained employment, the Information and Service Branch had to a great extent assisted in placing vocationally trained men. All concerned were notified that the Training Branch was responsible for securing employment for all graduates, also, for all handicapped cases, whether vocationally trained or not.

SUPERVISION

In order to see that this policy was carried out, head office has followed certain lines of action: (1) Dealing, as heretofore, with individual cases as reported by their monthly follow-up reports. (2) Observing results and where necessary by constructive criticism with regard to them. (3) Advising them concerning the organization and methods of work.

1. By taking up with district officers individual cases and suggesting methods of dealing with them.

2. Various charts and statistics have been forwarded showing the comparative standing of the units and where they have been successful and unsuccessful, and generally observing the results of the work. This too has resulted in continued effort on the part of the units to get every man satisfactorily placed and to find out what has happened to each graduate in order to know definitely the results of retraining.

3. By sending to each district an experienced employment officer to assist in the organization of the Employment Division and offer suggestions regarding methods of interviewing men and employers.

4. By creating at head office a special section to find openings for employment for severely disabled men and to secure appointments for those who were suitable, in the Civil Service.

RESULTS—CLOSED CASES

Up to the present the policy of the department has been to cease following up graduates whenever they have held a steady position for at least four months. However, there are certain graduates who "go abroad" or, otherwise, are "unable to trace;" others return to hospital for lengthy periods or die; while a few do not merit further consideration from the department.

The following figures give the results of these cases that have been closed:—

CASES CLOSED, DECEMBER 31, 1920

	Number	Per cent
Following line of training	17,320	71·96
Following other lines	4,861	20·19
Total employed	22,181	92·15
Not a success	194	0·80
Unable to trace	733	3·05
Gone abroad	663	2·76
Sick	205	0·85
Dead	94	0·39
Totals	24,070	100·00

Owing to the industrial conditions and the natural turnover of employment some of these men again become unemployed, and are being given further assistance, but for the purpose of judging the results of vocational training, it is considered that the policy outlined above is a reasonable one.

FOLLOW-UP

The number of graduates at December 31, 1920, was 36,826. The number of graduates whose cases were considered closed by the department was 24,070. The difference between the number of graduates and cases closed are known as active follow-up cases. These on December 31, 1920, numbered 12,756.

The department does not lose interest in a man as soon as he has completed his training, nor yet has it considered its responsibility ended when the graduate has been placed in employment. By means of the follow-up work of the Aftercare Section, the department continues to keep in touch with them and thus is kept informed and can record the manner in which the graduates from the vocational training classes and industries acquit themselves in civilian life.

The moment the returned soldier once again joins the army of competitive wage-earners he comes under the jurisdiction of this section. Monthly reports are furnished on which are recorded particulars as to present employment. Contact is maintained with graduates by three methods:—

(1) Visiting them at their homes or places of employment.

(2) Visiting employers.

(3) Correspondence.

The fact that in very few instances, have we been refused information by the men, is due to the manner in which the investigators do their work.

The value of the work of the Training Branch of the department depends on the results. Without the After-care Section there would be no means of gauging these results and any statistics which might be compiled otherwise would be both incomplete and inaccurate.

LOANS DIVISION

The following is an extract from P.C. 2329,* under which the department is authorized to make loans to certain classes of ex-members of the forces:—

> (*a*) That the Department of Soldiers' Civil Re-establishment at its discretion be authorized to advance by way of loan to those disabled men who have been retrained and who are in need of same, a sum not exceeding $500,

* See Appendix XVII, page 166, Annual Report for 1919.

for the purchase of tools and equipment necessary to establish them in their new occupation, such loans to be repayable within five years from date of issue without interest.

(*b*) That the Department of Soldiers' Civil Re-establishment at its discretion be authorized to advance by way of loan to those men who are disabled and who are in need of same, a sum not exceeding $500, to enable them to pursue any course of training or education that was substantially interrupted by war service, providing in all cases that the disability was of such a nature as to make assistance necessary, and provided further that such men are not entitled to or have not taken training under the Department of Soldiers' Civil Re-establishment; all such loans to be repayable in five years without interest.

ORGANIZATION

In order to comply with the provisions of Order in Council P.C. 2329, it was necessary to bring into being a separate division of the Training Branch in head office. Regulations in amplification of the Order in Council were issued to the various district vocational officers, who appointed loans officers for their respective districts. These loans officers, without exception, are officials who have had previous experience in dealing with the training of the disabled ex-service men.

The organization of the Loans Division is as follows:—

In Ottawa there is a Central Administrative office, in charge of a chief loans officer, who is directly responsible to the Director of Vocational Training. In each province, there are district loans officers, responsible through the respective district vocational officers to the chief loans officer in Ottawa.

The functions of the Central Administrative office are to determine matters of policy, the issuance of regulations and forms, the approval or otherwise of all applications, the custody of legal documents, and the maintenance of adequate records.

The administration in the units may be divided into the following sections: investigation of applications, legal, records, inspection and collection after the loan has been approved.

GENERAL POLICY

Having in view the fact that this financial assistance is strictly in the nature of a loan, to make a borrower realize this, and further, to insure protection and repayment, every effort has been made adequately to secure advances made. It is considered that to impress a borrower with the necessity for meeting his obligations is just as much a phase of re-establishment as the provision of a loan to enable him to commence business after his retraining course has been completed.

Where industrial loans have been made under sub-paragraph "a" of P.C. 2329, promissory notes and either mortgages, chattel mortgages or agreements have been obtained. Further, except in certain special cases, only essential tools, equipment or machinery have been purchased. The purchase of consumable stock-in-trade has not been permitted. Cash loans have not been made, neither have loans been granted to those who have obtained assistance under the Soldier Settlement Act. All purchases have been made through the medium of the existing purchasing organization of the department, and the equipment has not been released to a borrower until the various legal documents have been obtained.

It has been insisted that all equipment be adequately covered by insurance, the premiums being paid by the borrower.

For the most part, the repayment of the advances has been arranged on the basis of $100 per annum, consideration being given, however, to the nature of the trade and the location in which the borrower has established himself. Whilst promissory

notes have been obtained covering certain stated periods, it has been found expedient to endeavour to obtain small payments on account of such promissory notes, the payments being credited to the borrower and endorsed on the notes.

INVESTIGATIONS OF APPLICATIONS

A disabled, retrained graduate is required to make an application on a certain standard form. On this form he signs a statement to the effect that he is willing to give promissory notes and sign a chattel mortgage covering the equipment to be purchased. He must also provide the names of two or more responsible business men who recommend him. The application is then considered by the District Loans officer. Possibilities of success are thoroughly investigated, that is to say, the applicant must, first of all, have satisfactorily completed his retraining course. He must be found to be adapted to the work, and further, although it is extremely difficult to determine, the investigator must endeavour to be assured that the applicant has sufficient business acumen to make a success of his venture. The proposed location and existing or possible competition has to be considered, and finally, the borrower is assisted in the choice of his equipment, the loans officer endeavouring to arrange purchase at the most favourable prices. Only absolutely essential equipment is recommended for purchase in the first instance, and provided that, later on, it is found that the business is good, a supplementary loan might be granted for the purpose of purchasing additional equipment, provided that the total loan does not exceed $500.

The application, together with a confidential report covering the points mentioned above, is then submitted to the Chief Loans officer for approval or otherwise. The particulars and information forwarded are checked with the training and personal records already on file in head office, and a decision arrived at.

District Loans officers are required to render to head office a monthly trade report covering the general conditions of the various trades in their respective districts. These reports serve as a useful guide in dealing with applications.

APPLICATIONS RECEIVED AND DEALT WITH UP TO AND INCLUDING DECEMBER 31, 1920.

Unit.	Appls. Recd.	Appls. Appd.	Appls. not Appd.	Appls. Defd.	Appls. Cancelled.	Appls. under investigation.	Amount Approved	Amount Outstanding
							$ cts.	$ cts.
"A"	78	59	15	2	2	.....	20,818 17	17,026 62
"B"	116	87	23	.....	.....	6	31,597 60	25,750 69
"C"	135	111	18	.....	4	2	36,292 83	33,222 98
"D"	644	491	136	.....	13	4	182,782 23	165,670 50
"F"	142	103	31	.....	5	3	34,028 54	31,180 99
"G"	116	92	17	.....	6	1	32,714 61	30,029 74
"H"	83	68	11	.....	2	2	26,761 30	24,102 19
"I"	183	143	28	.....	10	2	55,586 54	51,207 09
"J"	361	283	64	.....	10	4	104,521 72	85,198 72
"K"	82	67	11	.....	3	1	19,901 22	17,279 09
Total	1,940	1,504	354	2	55	25	545,004 76	480,668 61

NOTE:—This table includes Class "A" and "B" loans.

DIVERSITY OF TRADES

The number of different occupations in which men have been established under this scheme is 83. This, of course, is affected by the diversity of occupations taught, and it is only in a certain number that it has been possible for a retrained graduate

to commence business for himself. In such occupations as plumbing, cabinet-making, carpentering, etc., the actual tools required by a journeyman are purchased, thereby enabling the man to obtain employment at the prevailing rates for journeymen. Without these tools, this could not be done.

SERVICE INSPECTION, FOLLOW-UP AND COLLECTION

The limit of any loan is $500. This in itself, is not sufficient in the majority of cases, for the complete establishment of a business, that is to say, the borrower must have money of his own for payment of rent, the purchase of stock-in-trade, and further, sufficient to tide him over the intial period. It will be seen, therefore, that since the borrower must invest a certain amount of his own money, he will put forward greater endeavour on such account to make a success.

Frequent visits are made by an inspecting officer, whose duty is primarily to assist the man in his effort, and secondly, to safeguard the interests of the department For the most part, these inspecting officers are officials who have previously been employed as industrial training inspectors. During their employment as industrial training inspectors, they have come into contact with the man whilst he has been undergoing his retraining, and in the majority of cases, they know him personally. It is, therefore, a very simple matter for these inspecting officers to approach the borrowers, advise them regarding their business, having in view their necessarily wider knowledge of business conditions; assist them in the keeping of their accounts, and in the care of their machinery. Incidentally in some instances, they are able to obtain business for the man. As a business becomes more firmly established, the inspector pays less frequent visits, and at this phase, the borrower is advised to commence the repayment of his loan, irrespective of the fact that the first promissory note may not yet be due. It is an obious fact that there is a certain class of men who are not able to accumulate a large amount in order to pay off an indebtedness at maturity. Therefore, the small payment plan is to the mutual advantage of both the borrower and the Government. When a borrower who has made a series of small payments, finds that he cannot meet the balance of the note at maturity, the fact that he has already paid so much on account is taken into consideration and an extension of time granted.

LEGAL MATTERS

At the outset, a copy of the proposed regulations was referred to the Department of Justice for advice as to the legal aspect of the scheme generally. As previously stated, promissory notes, chattel mortgages, mortgages or agreements have been obtained, according to the various provincial statutes. The Department of Justice authorized the employment of certain barristers in the various districts. In this connection it was found that legal work in the cities of Toronto and Vancouver was becoming so heavy and expensive that it was considered advisable to obtain the exclusive services of a barrister in each place. This has effected a considerable saving in the overhead expenses. Further, the services of these barristers are always available in connection with any legal work required by a borrower, e.g., the execution of partnership agreements, taking oaths, etc.

In the provinces of Saskatchewan and Alberta, it has been possible to obtain amendments to the provincial statutes, whereby the necessity for renewals of chattel mortgages is obviated when the Crown is the mortgagee. An endeavour is being made to have similar amendments placed on the statutes of the other provinces where applicable. Whilst this, in itself, is only a small monetary saving, it is considered that it will also prove to be a considerable saving in labour and supervision.

CANCELLED APPLICATIONS AND APPROVALS

Upon reference to the following table, it will be observed that 55 applications submitted to Ottawa have been cancelled and 128 approved loans have been cancelled, or in other words have not gone into effect.

In all these cases cancellation has been requested by the applicant. For the most part, it was found that he did not desire to take advantage of the assistance available, or he could not comply with certain special conditions imposed, e.g., the provision of adequate security; payment of part of purchase price of automobiles or trucks, or payment of insurance premium.

APPLICATIONS AND APPROVED LOANS "CANCELLED" UP TO AND INCLUDING DECEMBER 31, 1920

Unit	Applications Cancelled	Approved Loans Cancelled
"A"	2	8
"B"	..	11
"C"	4	6
"D"	13	33
"F"	5	6
"G"	6	6
"H"	2	5
"I"	10	7
"J"	10	41
"K"	3	5
Total	55	128

NOTE.—This table includes Class "A" and "B" Loans.

DISCONTINUED LOANS

Certain borrowers, for various reasons, have failed in business, or it has been necessary in some cases, to seize the equipment supplied. Such loans are considered as discontinued.

For the main part, adverse business conditions have been responsible for these failures, and family troubles have been the cause of others. Certain borrowers have proved to be incapable of conducting a business of their own and in these cases, the department has had no option but to take back the equipment supplied and dispose of it.

In all cases every possible means has been adopted to endeavour to obtain complete recoveries. That is, the equipment has been sold and steps have been taken to recover any difference owing through small payments from the man at stated periods. In certain cases where the failure has been through no fault on the part of the borrower, an effort is made to arrange matters so that no undue hardship is caused.

COLLECTIONS

The following table shows by units the amounts due to December 31, 1920, the amounts paid and renewed, and in addition the amounts paid on account of notes not yet due.

The result does not quite approach the anticipated amount, nevertheless, it is considered very fair in view of the present trade conditions.

COLLECTION OF PROMISSORY NOTES UP TO DECEMBER 31, 1920.

Unit.	Amount Due.	Amount Paid.	Per Cent.	Amount Renewed.	Per Cent.	Amount paid on acct. prior to maturity.
	$ cts.	$ cts.		$ cts.		$ cts.
"A"	247 33	247 33	100			62 02
"B"	156 35	125 00	73	31 35	27	949 26
"C"						171 55
"D"	168 20	94 37	56	73 83	44	278 50
"F"	100 00	100 00	100			150 00
"G"	139 82	39 82	28	100 00	72	100 00
"H"						
"I"	566 65	390 00	68	176 65	32	200 00
"J"	193 11	100 21	51	92 90	49	199 52
"K"	113 00	113 00	100			
Total of all Units	1,684 46	1,209 73	72	474 73	28	2,110 85

Total amount collected on notes due	$ 1,209 73
Total amount collected before maturity	2,110 85
Total amount collected on current loans	$ 3,320 58

LOANS FULLY REPAID

The following table shows the total number and amounts of loans which have already been paid.

These are for the most part successful cases, but in some instances the borrowers have simply repaid their loan on account of commencing in some other sphere of activity.

FULLY REPAID LOANS UP TO AND INCLUDING DECEMBER 31, 1920

Unit	No Repaid	Amount Repaid
"A"	1	$ 126 00
"B"	2	418 00
"D"	7	2,536 00
"I"	1	400 00
"J"	6	2,149 45
"K"	2	527 55
Total	19	$6,157 00

It is expected that in some few cases extensions of time may have to be allowed, but on the whole, it is anticipated that the loans will be paid up fairly well.

NUMBER OF LOANS, BY TRADES, IN OPERATION, AT DECEMBER 31, 1920

Trade	Number	Discontinued	Cancelled	Repaid
Auto mechanics	81	5	10	2
Arts and designing	1	..	..	..
Auto painting	5	1	2	..
Auto top repairing	2	..	..	..
Agriculture—"B" loan	1	..	..	..
Apiarist	2	..	..	..
Assaying and mining	3	..	..	..
Barbering	84	10	12	5
Baking	4	..	..	..
Battery service	34	..	1	..
Bicycle repairing	2	..	..	..
Blacksmithing	1	..	..	..
Butchering	8	..	1	..
Boat building	4	..	1	..
Brokerage	2	1	.	.

NUMBER OF LOANS, BY TRADES, IN OPERATION, AT DECEMBER 31, 1920—*Concluded.*

Trade	Number	Discontinued	Cancelled	Repaid
Cabinet-making	28	..	5	..
Carpentering	13	..	..	..
Cleaning and pressing	17	2	..	..
Confectionery	10	..	..	..
Civil Service, Post Office	2	..	..	..
Contracting	18	..	..	..
Commercial work	7	..	..	..
Commercial art	1	..	..	..
Chiropodist	1	..	..	..
Dentistry	19	..	..	..
Draughting	7	..	1	..
Decorating	3	..	1	..
Dairying	1	..	..	..
Electricians	23	1	2	..
Engineering "B" loans	6	..	..	..
Electro-plating	1	..	..	..
Electric welding	1	..	..	..
Fishing	5	..	..	..
Farming (small)	16	..	..	1
" (fox)	1	..	..	..
" (fruit)	1	..	..	..
" (poultry)	16	1	1	..
Gardening	22	..	..	..
General repair work	9	1	..	..
Hotel-keeping	2	1	..	..
Harness-making	6	..	..	..
Hat manufacturing	4	2	..	..
Laundry work	1	..	..	..
Law	41	..	3	..
Locksmithing	1	..	..	..
Machinist	12	..	2	..
Medicine	12	..	1	..
Massaging	4	..	..	..
Motion pictures	7	1	2	..
Manufacturing	2	..	..	..
Ministry "B" loan	1	..	..	..
Motor-cycle repairs	1	..	..	..
Music	11	..	1	..
Navigation	2	..	2	..
Optometry	29	2	4	..
Oxy-acetylene welding	16	..	4	..
Pharmacy	9	..	..	..
Photography	28	..	5	..
Plumbing	11	..	2	..
Picture-framing	3	..	1	..
Printing	13	..	..	..
Piano-tuning	6	..	..	..
Reed and rattan work	2	..	..	..
Rodentarian	2	..	..	..
Salesmanship	51	4	5	2
Shoemaking	400	24	27	5
Show-card writing	24	1	3	..
Sign painting	5	..	..	..
Store-keeping	32	..	3	1
Saw-filing	2	..	..	..
Tailoring	22	1	2	..
Taxi service	39	8	..	..
Telegraphy	3	..	..	..
Tinsmithing	2	..	..	..
Transfer-baggage	70	4	9	2
Toymaking	1	..	..	..
Typewriter repairing	3	..	..	..
Upholstering	9	..	2	..
Undertaking	2	..	..	..
Vulcanizing	116	6	12	1
Veterinary surgeon	1	..	..	..
Watch repairing	19	..	1	..
Wood-working	15	3	..	..
Total	1,504	79	128	19

CLASS "B" EDUCATIONAL LOANS

Under sub-paragraph "B" of Order in Council P.C. 2329 it has been permissible to grant loans to disabled men, to enable them to continue their education or training, which was interrupted by war service.

The following table shows the number of applications received, approved, and not approved. The majority of these applications were not approved owing to the fact that the disability claimed was so slight that it did not warrant the desired assistance.

"B" LOANS UP TO AND INCLUDING DECEMBER 31, 1920

Units	Number Applications Received	Number Applications Approved	Number Applications not Approved	Number Applications Cancelled
"A"	10	3	7	..
"B"	11	5	6	..
"C"	8	2	6	..
"D"	91	12	77	2
"F"	13	1	12	..
"G"	6	1	4	1
"H"	3	..	3	..
"I"	17	3	12	2
"J"	22	4	18	..
"K"	4	..	4	..
Totals	185	31	149	5

NOTE.—One of the five applications approved in "B" Unit, has recently been cancelled, leaving four loans only outstanding.

BALANCE SHEET. LOANS TO DECEMBER 31, 1920.

Date.	Dr.	Date.	Cr.		
Dec. 31, 1920.	Total amount of loans approved..$545,004 76	Dec. 31, 1920.	Repayments:		
			Loans fully repaid..... $	6,157 00	
			Paid on notes on maturity.	1,209 73	
			Paid on notes before maturity.....	2,110 85	
				$	9,477 58
			Discontinued Loans—		
			Amount realized on sale of equipment.....	10,188 87	
			Loan value of equipment awaiting disposal.....	19,849 56*	
			Amount not recoverable...	280 00	
					30,318 43
			Cancelled Loans—		
			Amount of loans cancelled.....		44,389 70
			Total.....	$	84,185 71
			Amount outstanding on approved loans.....		†460,819 05
	545,004 76			$	545,004 76

*Included in amount outstanding in table, page
†The actual expenditure to the 31st December, 1920 amounted to $437,478.25.

RECORDS AND STATISTICS

OBJECT

1. In keeping the records and statistics of the Training Branch, the object has been to provide immediate, adequate and reliable records and statistics and also to provide, in place of many records in various forms, simplified records which would

give all the essential information. Further, to eliminate any records as soon as the purpose for which they were created has been fulfilled.

2. In caring for men after completion every effort is made to get each man satisfactorily placed in employment.

To accomplish this it has necessitated the keeping of the following records:—

(1) (*a*) Record of all men taking vocational training.
(*b*) Follow-up records of graduates.
(*c*) Recording of weekly attendance of students in vocational and curative training.
(*d*) Instructors' reports.
(2) The compiling of vocational statistics.
(3) After-care correspondence.

METHOD OF RECORDING

The methods by which these records have been maintained should first be explained.

(*a*) Records are obtained from the individual files. The approval of courses is centralized at head office and all subsequent changes are forwarded for approval. It is from these individual changes that records are obtained up to completion.

(*b*) An individual monthly report of the follow-up record of each graduate is forwarded until the man's case is closed.

In other words, the individual files give the complete history of each case and it is from this individual information that records are obtained.

This procedure (*a*) and (*b*) works out very satisfactorily as one group notes all information up to completion using one set of cards while another group notes the follow-up work.

(*c*) *Attendance.*—An individual attendance record was forwarded weekly by units for all men taking vocational training. These records were summarized under institutions by classes. In March, 1920, it was decided that the keeping of these records was not essential to the administration from head office owing to the establishment of local unit auditors. This allowed for a reduction of staff at head office. However, the information was still maintained from the methods described in paragraph (*a*). This was a very big step in reducing the duplication of records.

Curative Training.—Similar individual reports, were forwarded for men taking curative workshop and ward occupation in the various hospitals. This report was simplified by calling for a statistical return which was a summary of such work rather than an individual report. This also simplified not only the form of the return but the method of recording it. Although the Treatment Branch now supervises this work, arrangements have been made for the Training Branch to continue keeping these records.

STATISTICS

The statistics are compiled from the individual records.

One of the hardest tasks, owing to the very large number of files received daily, was to record the information properly and at the same time to dispose of the files without any unnecessary delay. In order to do this, the information on the file was noted on the Headquarters card, and the file returned to Central Registry. A statement was then written from the card. This statement was utilized first of all as a basis for statistics, and secondly, as a means of recording the various records such as the alphabetical index and the Brigham records up to completion. However, with the elimination of the current Brigham cards, the statement was no longer required and the noted card was used to maintain the statistics.

During the latter part of 1919 most of the returns which were secured were done by counting the particular section of the cards concerned. While this served its purpose there was no interrelation between the various figures given and no system of balancing the statistics maintained. It was therefore necessary to create a basic figure. Also, a steady process of checking and auditing of the cards has been made. This checking and reviewing of records is still maintained in order to have a thoroughly reliable set of records.

CHANGES

During the latter part of 1919 and this year there has been a gradual process of co-ordination and elimination of any unnecessary records. If this simplifying of records had not taken place it would have required a considerably larger staff to maintain the records as they were first planned.

HOLLERITH RECORDS

During the year it was decided that the final records of the Training Branch should be put on the Hollerith card record. By doing this the department is provided with a permanent record of every man who has taken vocational training, a record that is easily available and from which statistics can be obtained at a minimum of time and cost. The information recorded on each man is as follows:—

Regimental number.
Name.
Overseas unit.
Age.
Social condition (married, single or widower).
Number of children.
Other dependents.
Pre-war education.
Pre-war occupations.
Disability.
Length of course.
Date commenced.
Course taken.
Place where retrained.
Method of retraining.
If course changed, reasons for same.
Extensions granted.
Suspensions if any.
Discontinuance if any.
Final disposition.
Trade in which loan applied for.
Class and amount of loan applied for.
Application granted or refused.
Termination of loan.

It will be seen from this that to code the very detailed information requires a thorough knowledge both of training procedure and its application to the records. Clerks having this experience were put on and this work is well under way.

DECREASE IN STAFF

The reorganization and co-ordination of work has resulted in a considerable decrease in the staff.

On December 31, 1919, there were 123 on the staff, on December 31, 1920 there were 71.

There would have been a much larger reduction of staff but for the extra work entailed in coding the final records on the Hollerith cards. There are at present seventeen clerks engaged in this work.

The attached staff and files summary also shows that the number of files still remains very large. From January 1, 1920, to December 31 were handled 446,990 files, an average of 1,487 a day.

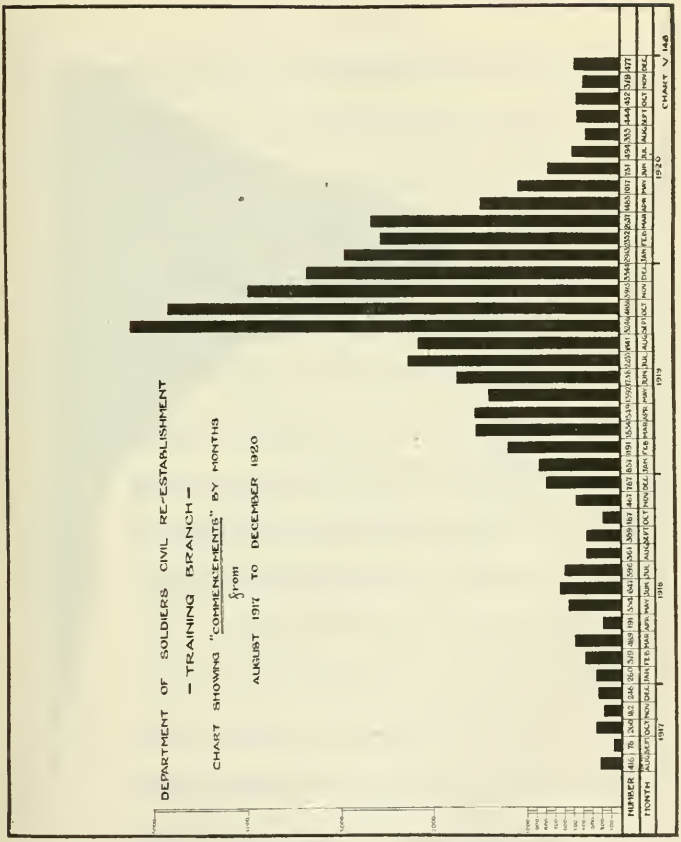
WORK OF THE STAFF

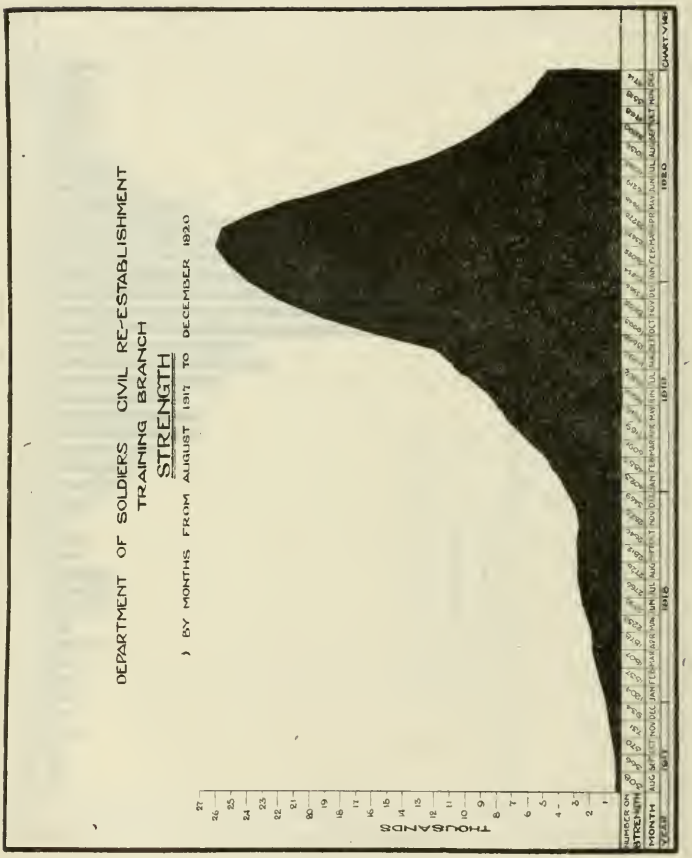
The clearing of the constant flow of files has been one of the greatest tasks. Quite frequently 2,500 or 3,000 files come into the office in a day. However, the work of recording is not simply a copying operation. It requires a good knowledge of training procedure to make an intelligible summary and to interpret the various subsequent letters which are written in each case. It also requires considerable further care to see that each file contains a proper sequence. Quite frequently, conflicting information is noted and has to be corrected.

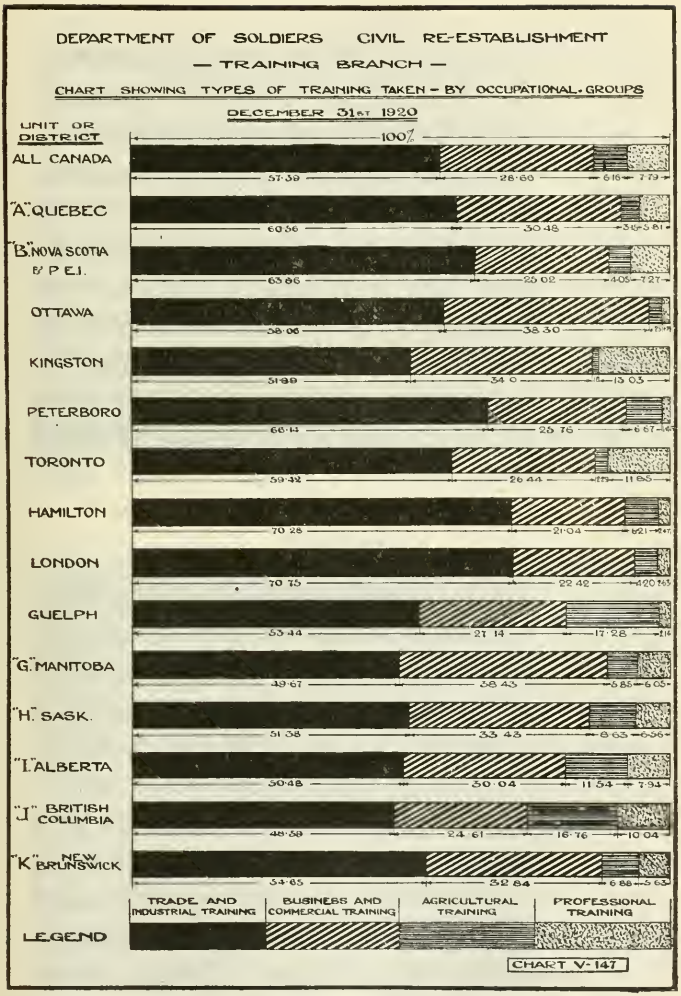
NUMBER OF FILES AND STAFF MONTHLY, YEAR 1920

1920	No. of Staff	No. of Files
January	123	33,981
February	124	32,147
March	120	36,774
April	110	46,025
May	111	43,201
June	105	42,686
July	103	44,595
August	97	38,091
September	90	32,111
October	79	31,787
November	73	38,813
December	71	26,779
Total		446,990

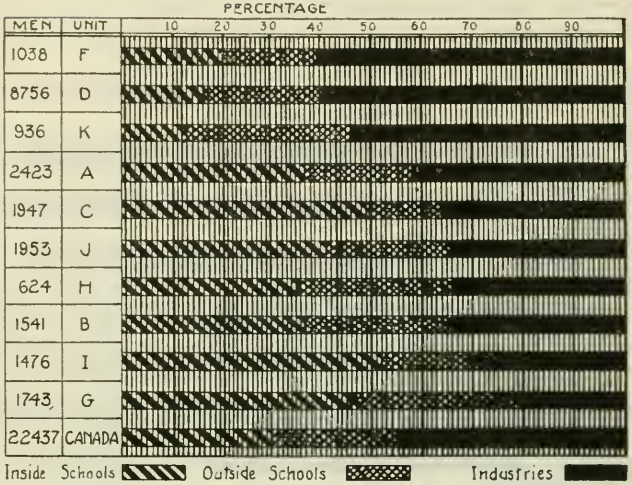
Average number of files per day, 1,487.


DEPARTMENT OF SOLDIERS CIVIL RE-ESTABLISHMENT
— TRAINING BRANCH —
CHART SHOWING "COMMENCEMENTS" BY MONTHS
from
AUGUST 1917 TO DECEMBER 1920
NUMBER
MONTH
1917
1918
1919
1920
CHART V 145

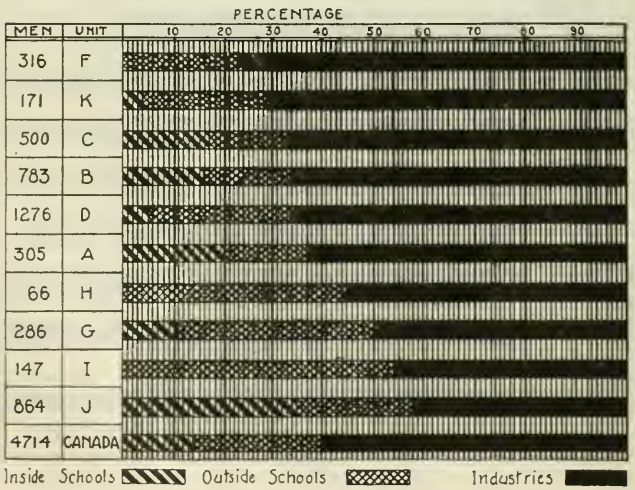

DEPARTMENT OF SOLDIERS CIVIL RE-ESTABLISHMENT
TRAINING BRANCH
STRENGTH
BY MONTHS FROM AUGUST 1917 TO DECEMBER 1920
THOUSANDS
NUMBER ON STRENGTH
MONTH
YEAR
1917
1918
1919
1920
CHART V


DEPARTMENT OF SOLDIERS CIVIL RE-ESTABLISHMENT
— TRAINING BRANCH —
CHART SHOWING TYPES OF TRAINING TAKEN - BY OCCUPATIONAL-GROUPS
DECEMBER 31ST 1920
UNIT OR DISTRICT
100%
ALL CANADA
57·39
28·60
6·16
7·79
"A" QUEBEC
60·56
30·48
3·65
5·81
"B" NOVA SCOTIA & P.E.I.
63·86
23·02
4·05
7·21
OTTAWA
58·06
38·30
3·64
KINGSTON
51·99
34·0
13·03
PETERBORO
66·14
25·76
6·67
1·63
TORONTO
59·32
26·44
11·65
HAMILTON
70·25
21·04
6·21
2·49
LONDON
70·75
22·42
4·20
2·63
GUELPH
53·44
27·14
17·28
2·14
"G" MANITOBA
49·67
38·43
5·85
6·05
"H" SASK.
51·38
33·43
8·63
6·56
"I" ALBERTA
50·48
30·04
11·54
7·94
"J" BRITISH COLUMBIA
48·59
24·61
16·76
10·04
"K" NEW BRUNSWICK
54·65
32·84
6·88
5·63
TRADE AND INDUSTRIAL TRAINING
BUSINESS AND COMMERCIAL TRAINING
AGRICULTURAL TRAINING
PROFESSIONAL TRAINING
LEGEND
CHART V-147

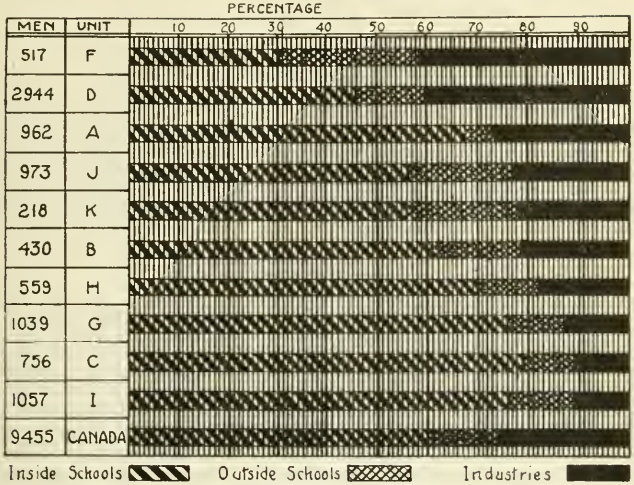
CURRENT RETRAINING DEC. 31, 1919.



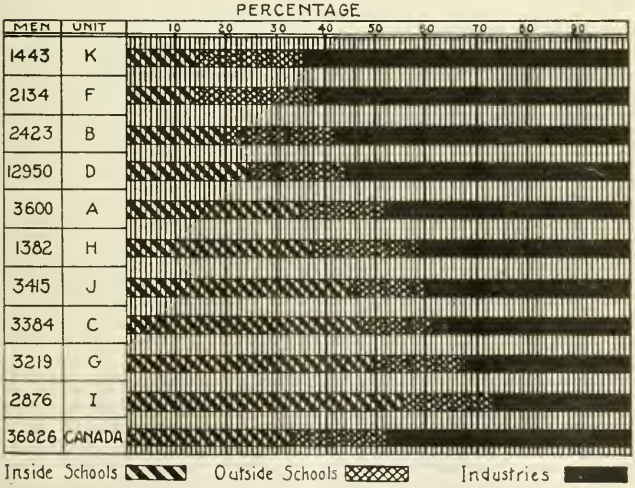
CURRENT RETRAINING DEC. 31, 1920.



GRADUATES DEC. 31,1919.



GRADUATES DEC. 31,1920.



INFORMATION AND SERVICE BRANCH

Prior to the date of the armistice, the majority of the members of the Canadian Expeditionary Force who had returned from overseas were physically unfit. The main provisions it was necessary to make for them were hospitalization, pensions, and vocational training. On the 11th November, 1918, the Government was faced with another problem, that of reabsorbing into civil life the personnel of the Canadian Corps then overseas, which, with the addition of men still in hospitals in France and England, numbered approximately 350,000 men.

PRELIMINARY MEASURES

On the date of the cessation of hostilities, the Minister of Soldiers' Civil Re-establishment summoned to the capital a prominent manufacturer and one of the leaders of the labour movement in Canada. The first was Mr. L. L. Anthes, Chairman of the Toronto Branch of the Canadian Manufacturers' Association, then serving as a major in the Canadian Engineers. The second Mr. T. A. Stevenson, Secretary-Treasurer of the Toronto Trades and Labour Council, and President of the Typographical Union of Canada. On arrival, they were assigned the task of formulating plans for dealing with the re-establishment of all members of the Canadian Expeditionary Forces, and Allied Forces returning to Canada, for whom other facilities had not been provided. Besides being requested to formulate plans, they were also asked to assume the responsible duty of carrying them out.

THE CREATION OF THE BRANCH

The nature of the problem which confronted them may be appreciated better when it is realized that until this time the only provisions made for dealing with re-establishment were: (*a*) the Medical Treatment Branch and Vocational Training Branch of the Department of Soldiers' Civil Re-establishment, which had been established to treat and retrain the comparatively small number of men who had returned from overseas physically unfit to resume their former occupations;

(*b*) the Soldier Settlement Board, which was considering an extensive land settlement scheme.

There was no co-ordinated system for placing men, whether ex-soldiers or civilians, in touch with employment opportunities, nor for solving the manifold problems that confronted a man on his return to civil life, except through the various Provincial Returned Soldier Commissions, which had done an excellent work in this direction, and other patriotic organizations throughout the country which had been dealing with the situation locally. There was no desire to interfere with the operation of these organizations, but it was felt that to dispose adequately of such a large number of men on their arrival, became a federal responsibility.

While the problems to be solved were many and varied, yet the most important seemed to be to ensure employment for men as soon as possible after their arrival. There were not more than eleven Government employment offices throughout the whole of Canada, and it was foreseen that the only way to prevent congestion in the larger cities, and to reabsorb approximately 350,000 men into a population which numbered at that time less than 8,000,000 was to establish a chain of employment offices from coast to coast. After a careful survey of the situation, and conferences

with leading men engaged in wrestling with these problems, it was decided to create a new branch of the Department of Soldiers' Civil Re-establishment, which was tentatively termed the Demobilization Branch, but as a truer perspective developed as to its functions, the title was changed to that of "The Information and Service Branch," headquarters being established at 130 Queen street, Ottawa. Of this branch, Mr. L. L. Anthes became the first director, with Mr. T. A. Stevenson as assistant director. This arrangement continued until Mr. Anthes, on account of pressure of private business, and as the back of the work was broken, resigned in the early part of 1920, and was succeeded by Mr. T. A. Stevenson. The functions of the branch were:—

1. To place demobilized men in touch with opportunities for employment.

2. To re-establish the large number of professional and business men who had severed their connections and abandoned their practices on enlistment.

3. To render information and assistance to returned men in their various private and personal troubles.

QUESTIONNAIRES

In order that the Government agencies in Canada, dealing with the various phases of re-establishment, might have sufficient information on which to base policies, make provision for employment facilities, and be in a position to advise the men as to their future, it was deemed desirable to obtain accurate and up to date information regarding the former occupations of the men still overseas, and also the work in which they desired to engage on their return. Some of them who had severed their business and residential connections on enlistment, desired to settle down in other parts of the country, and many also thought the time opportune for taking up other than their pre-war employment, on their return to civil life. To obtain this information the department selected representatives from officers with organizing ability, still serving in the forces, who furnished a questionnaire to every member of the Canadian corps on the Western Front. The magnitude of this work will be realized when it is appreciated that a part of the Canadian corps was on the Rhine, and a part in Belgium; the Canadian Forestry Corps was scattered all over France from Bordeaux to the Vosges; troops were also constantly moving up and down the lines of communication, and the hospitals and training camps in England and Scotland were crowded with men. Facilities for carrying out this work existed in England, but it was different on the continent. The roads and railways had been blown up by the retreating enemy, and only the actual roads followed by the army on its march into Germany had been even hastily repaired. Thousands of kilometres had to be travelled in the depth of winter, and in the face of many hardships and difficulties. The rapid completion and collection of these questionnaires was only rendered possible by the courtesy of the high command, and the initiative and persistence of the department's representatives. Over 99 per cent of all Canadians serving overseas completed the questionnaires, and such rapid progress was made, that the latter reached the head office of the Information and Service Branch in Ottawa prior to the commencement of general demobilization.

EMPLOYMENT OFFICES

Under the Employment Offices Co-ordination Act passed at the parliamentary session of 1918, the existing Provincial Government Employment Offices in Canada were merged into one organization and termed the Employment Service of Canada, under the direction of the Department of Labour. In co-operation with the Information and Service Branch a large additional number of offices were opened throughout the country from Prince Edward Island to the Pacific coast. In those offices already established, and those which were opened in the larger cities, representatives of the

Information and Service Branch were placed, in order to give special attention to the problems of returned men applying for employment, information, or other assistance. The Chief of Staff in these offices was given the title of District Representative.

Even this provision was not considered entirely adequate to deal with the problems to be faced, and a number of additional offices of the Information and Service Branch were opened all over the country, even to Dawson City, in order to act as feeders to the larger offices and to give that immediate and personal service which the Government desired to place at the disposal of the returned men. Such men were termed Local Representatives.

These offices eventually formed part of the chain of offices of the Employment Service of Canada, the cost of maintenance being borne by the Federal Department of Labour, the Information and Service Branch, and the various Provincial Departments of Labour interested.

In the smaller places it was felt that many men would seek out their former officers and friends in the army, who returned to established positions in their respective communities, for assistance and advice, and arrangements were made for many so placed to act as representatives of the branch on a part-time basis.

At the peak load of the work the number of offices which the branch operated, or in which it was represented, were:—

Unit service offices	16
Regular employment offices	105
Part-time offices	94

UNIT SERVICE OFFICERS

The country was divided into units, with boundaries roughly corresponding to the military districts, and in each an official, termed Unit Service Officer, was placed in charge of the group of offices established there. His functions were to control the employment work in his unit, to deal with complaints, and requests for assistance and advice, either by taking them up with the local Government organizations, business and professional clubs and citizens' committees, or direct with head office at Ottawa.

PROFESSIONAL AND BUSINESS SECTIONS

In each unit special offices were opened to deal with applications for employment and assistance from men who, before enlistment, had been engaged in a professional or business capacity, as it was felt that this class could not be successfully dealt with through the ordinary employment office channels. These offices were later recognized by the Employment Service of Canada as being a necessary link in the chain of Dominion-wide employment offices.

HANDICAP SECTION

The problem of the handicapped man did not present itself to the Information and Service Branch for some time after organization, as the war service gratuity, issued on demobilization, gave men a breathing spell. Provision had been made whereby men who were so disabled by war service as to be unfit to follow their previous avocations, could be given vocational training by the department, but it soon became apparent that there were men who, for various reasons, were handicapped in the open labour market, yet whose disability was not pensionable, or, if pensionable, only to a minor degree. Picked men were therefore detailed to analyse the needs of these handicap cases, and to give special attention to the question of placing them in jobs where a disability would not be considered an insurmountable bar to successful re-establishment.

DISPERSAL STATION REPRESENTATIVES

The first occasion on which returned men came into contact with the Information and Service Branch was at the dispersal stations where they were discharged from the army. Here representatives of the branch were stationed. Men who had been overseas for a period up to five years naturally desired information and advice on the measures the Government had taken for their re-establishment, as well as on other matters, which might be considered trivial, but which to the individual were of vital importance. After a man had returned to his home, and picked up the threads of life again, he naturally turned to the nearest office of the Information and Service Branch for assistance or advice. Although he might have a position all ready to go to, yet there were many ways in which some service was required. A recital of the variety of cases dealt with would fill a large volume, but the following list will briefly indicate the range: Employment, outfit, patriotic, clothing, compensation and separation allowances, decorations, deportations, discharge certificates, divorces, lost cheques, exchange, lost baggage, loans, immigration, military estates, missing soldiers and relatives, passports, refund of freight charges, money orders and travelling expenses, remission of sentence to imprisonment, repatriation, war service badges, and gratuities. The total number of such inquiries for information and assistance dealt with exceeded 1,218,472.

The staff in the various offices interviewed all returned men who applied for employment, and assisted them as far as possible in securing the kind of work desired. In many cases men were undecided as to the type of work in which they wished to engage, and the Information and Service Branch representatives were ever ready to give friendly advice and skilled assistance.

CANVASSING

The employment work did not merely consist of listing positions which were sent to the offices, but an active campaign was waged at all times to find suitable employment for returned men. Canvassers were regularly engaged in calling on employers to obtain notice of positions available, to ascertain the class of help required, and to place the organization at the disposition of the employer. These canvassers were very successful in inducing employers to create vacancies in which to place returned men during the winter of 1919-20, at which time the unemployment situation was particularly acute. Industries staffed largely with foreigners were explored to determine the degree to which returned men could replace this labour, and with the co-operation of the employers concerned, large replacements were effected.

CLEARANCE

In order to overcome the situation created by having a surplus of employment in one locality, and a surplus of workers in another, a system of inter-office, and later on inter-provincial clearance was instituted. It is worthy of passing note that a large percentage of the clearance work effected was from the larger cities towards the smaller communities.

The total number of positions found was 175,157, and the actual number of men placed was 109,493. The difference between the two figures is explained by the fact that many men were found positions more than one. (See statement 2.)

FEDERAL EMERGENCY APPROPRIATION

In December, 1919, the Federal Government established a fund for the relief of the ex-members of the forces who were out of work during the winter months of

1919-20. This fund was styled the Federal Emergency Appropriation. The assistance given under this fund was three-fold:—

(*a*) to men who were out of work,

(*b*) to men, who having work in other localities were without means of transportation to the place of work, and

(*c*) to men, who although working, were not in receipt of sufficient remuneration to support themselves and families.

The actual payment of cash was carried out by the Canadian Patriotic Fund, who furnished the relief on production, by the applicant, of a certificate from the Information and Service Branch stating that no employment was available, or that the other conditions existed, which were necessary to obtain such assistance. During the four months the fund was in existence some 54,583 men obtained assistance. The average length of time that such assistance was granted covered about five weeks, but only six men received assistance for the whole period of eighteen weeks; 190,979 certificates and renewals for all causes were issued.

It is interesting to note the reasons for which certificates were issued. They are as follows:—

	Per cent
Personal reasons—	
Handicap	5·2
Old age	4·4
Temporary illness	9·4
Occupational diseases	3·6
Seasonal occupations	12·3
Industrial reasons—	
Men whose training was interrupted by war service	12·5
Blind alley occupations	9·4
"White collar"	6·7
Shortage of work	13·5
Unskilled, untrained	23·0
Total	100·0

DEMOBILIZATION

In the spring of 1920 the work of the Information and Service Branch showed a marked contraction in volume, and the work of demobilization commenced. By the first of July all representatives from the public employment offices had been withdrawn, and the work assumed by the Employment Service of Canada. The Unit Offices were next wound up, and the head office of the branch closed its doors on November 30, 1920.

STATISTICS

The following statistical statements, dealing with various phases of the work of the branch, present a comprehensive survey of the number of men dealt with and results obtained, but do not do more than cover the barest outline of a task, the details of which cannot be compressed into the limited space available for this report:—

1. Employment in General—Showing the number of men registered and placed by provinces.

2. Placements in employment—Showing the number of times men were placed in positions.

3. Statements of Federal Emergency Appropriation—Analysis of certificates and renewal issued by provinces.

4. Flow Chart of Federal Emergency Appropriation certificates and renewals—showing, of the original applications each week, to how many renewals were issued.

STATISTICS OF THE INFORMATION AND SERVICE BRANCH, DEPARTMENT OF SOLDIERS' CIVIL RE-ESTABLISHMENT

STATEMENT No. 1—EMPLOYMENT IN GENERAL.

Unit.	Total men registered up to 30-6-20.	Total men placed to 30-6-20.	Men who were placed and who did not receive F.E.A.	No. of men who received under F.E.A.			Total men receiving Certificates.
				"A" Certs.	"B" Certs.	Both "A" & "B" Certs.	
1	2	3	4	5	6	7	8
Prince Edward Island	973	589	456	265	20	5	280
Nova Scotia	7,043	3,841	2,862	1,679	654	73	2,260
New Brunswick	6,965	4,717	4,243	605	169	16	758
Quebec	24,859	14,474	7,851	10,552	1,190	288	11,454
Eastern Ontario	8,689	5,768	4,099	2,747	627	98	3,276
Central Ontario	38,576	22,432	16,868	10,832	2,033	649	12,216
Western Ontario	9,472	8,319	7,645	510	610	114	1,006
New Ontario	4,393	4,142	3,876	116	213	34	295
Thunder Bay	1,973	1,540	1,335	159	89	8	240
Manitoba	15,607	9,720	7,723	2,533	1,789	762	3,560
Saskatchewan	8,158	5,040	3,993	1,588	912	101	2,399
Alberta	16,086	11,788	9,355	2,817	2,190	217	4,790
British Columbia	31,364	16,823	11,939	8,979	705	151	9,533
CANADA	174,158	109,493	81,975	43,382	11,201	2,516	52,067

STATISTICS OF THE INFORMATION AND SERVICE BRANCH, DEPARTMENT OF SOLDIERS' CIVIL RE-ESTABLISHMENT

STATEMENT No. 2—PLACEMENTS IN EMPLOYMENT.

Unit.	Number of men who were placed.										Total No. of men Placed.	Total Positions Found.	Total Inquiries Exclusive Employment.
	Once.	Twice.	Three Times.	Four Times.	Five Times.	Six Times.	Seven Times.	Eight Times.	Nine Times.	Ten or more times.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Prince Edward Island	426	102	30	20	9	2	0	0	0	0	589	843	10,236
Nova Scotia	3,030	593	155	37	14	7	3	1	1	0	3,841	4,907	23,488
New Brunswick	3,456	811	272	115	33	15	8	4	2	1	4,717	6,628	28,966
Quebec	9,129	2,757	1,414	534	291	154	79	50	24	42	14,474	24,639	102,407
Eastern Ontario	4,041	949	366	161	88	45	16	10	3	2	5,768	8,507	119,990
Central Ontario	15,704	3,962	1,464	664	306	143	90	33	33	33	22,432	34,092	228,758
Western Ontario	5,597	1,485	631	314	134	79	44	10	9	16	8,319	13,298	61,110
New Ontario	3,039	666	241	106	47	25	4	9	4	1	4,142	5,962	17,346
Thunder Bay	949	354	117	57	29	16	10	4	2	2	1,540	2,578	14,143
Manitoba	6,528	1,692	691	339	72	100	57	33	21	58	9,720	15,520	237,591
Saskatchewan	3,660	875	297	119	38	22	13	7	6	3	5,040	7,225	63,456
Alberta	5,709	4,797	727	773	186	96	43	31	18	10	11,788	22,570	47,590
British Columbia	10,888	3,193	1,296	657	337	194	83	64	48	63	16,823	28,388	263,391
CANADA	72,156	22,236	7,701	3,896	1,584	898	450	256	171	231	109,493	175,157	1,218,472
Percentage of total men placed	65·9	20·3	7·0	3·5	1·4	0·82	0·41	0·23	0·15	0·21	100	159·9	

STATEMENT No. 3—STATEMENT OF FEDERAL EMERGENCY APPROPRIATION.

Unit.	"A" Unemp. Cert. Issued.	Renewals to Same.	Total "A" Cert. and Rens.	"B" Certificates Issued.			Total "B" Cert.	Renewals "B" Cert.	Total "B" Cert. and Rens.	Grand Total A and B Cert. and Rens.	Average No. of weeks each man received Unemployment Certificates.
				Clause 1 "Insufficient Remuneration.	Clause 2 Transportation.	Both Clauses.					
1	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Prince Edward Island..	265	1,223	1,488	13	7	0	20	65	84	1,573	6·6
Nova Scotia.....	1,679	6,927	8,606	509	155	10	654	696	1,350	9,956	6·1
New Brunswick.....	605	1,451	2,056	128	43	2	169	621	790	2,846	4·4
Quebec.....	10,552	21,344	31,896	987	204	1	1,190	1,917	3,107	35,003	4·0
Eastern Ontario.....	2,747	7,791	10,538	394	265	32	627	1,300	1,927	12,465	4·8
Central Ontario.....	10,832	29,562	40,394	1,756	456	179	2,033	1,850	3,883	44,277	4·7
Western Ontario.....	510	429	939	575	47	12	610	70	680	1,619	2·8
New Ontario.....	116	111	227	96	120	3	213	101	314	541	2·9
Thunder Bay.....	159	502	661	36	54	0	89	149	238	899	5·1
Manitoba.....	2,533	6,762	9,295	240	1,557	8	1,789	1,372	3,161	12,456	4·6
Saskatchewan.....	1,588	5,396	6,984	724	196	8	912	1,245	2,157	9,141	5·4
Alberta.....	2,817	11,307	14,124	1,997	521	328	2,190	1,181	3,371	17,495	6·0
British Columbia and Yukon.....	8,979	32,048	41,027	538	193	26	705	976	1,681	42,708	5·6
CANADA.....	43,382	124,853	168,235	7,993	3,817	609	11,201	11,543	22,744	190,979	4·8

NOTE:—"A" Certificate indicated employment.

"B" Certificate indicated (a) Insufficient remuneration and (b) Need for transportation

STATISTICS OF THE INFORMATION AND SERVICE BRANCH, DEPARTMENT OF SOLDIERS' CIVIL RE-ESTABLISHMENT

STATEMENT No. 4—FLOW CHART OF FEDERAL EMERGENCY APPROPRIATION CERTIFICATES AND RENEWALS.

Series Starting.	1st week "A" Cert.	2nd week A.	3rd week B.	4th week C.	5th week D.	6th week A2.	7th week B2.	8th week C2.	9th week D2.	10th week A3.	11th week B3.	12th week C3.	13th week D3.	14th week A4.	15th week B4.	16th week C4.	17th week D4.	18th week A5.
Dec. 27–19.	4,641	1,764	1,681	955	900	421	400	81	75	57	42	37	33	19	12	8	6	6
Jan. 3–20.	6,666	3,351	2,088	1,537	1,407	1,107	1,039	921	823	477	446	223	190	129	105	68	56	
Jan. 10–20.	7,480	3,595	2,894	2,001	1,751	1,391	1,066	933	779	512	448	318	270	222	155	108		
Jan. 17–20.	5,346	4,102	3,181	2,460	1,871	1,647	1,344	988	859	634	533	292	184	123	74			
Jan. 24–20.	3,372	3,416	2,553	1,901	1,674	1,319	1,084	931	816	635	424	329	235	135				
Jan. 31–20.	2,403	2,603	2,225	1,844	1,609	1,118	1,013	814	682	193	454	320	206					
Feb. 7–20.	2,469	1,828	1,670	1,517	1,238	1,043	890	768	639	460	323	203						
Feb. 14–20.	1,726	1,485	1,247	1,112	939	789	685	491	424	258	107							
Feb. 21–20.	1,623	1,339	1,141	937	843	664	557	428	271	122								
Feb. 28–20.	1,489	1,100	952	793	685	476	474	255	107									
Mar. 6–20.	1,466	924	772	648	486	397	244	113										
Mar. 13–20.	1,187	883	751	508	444	259	123											
Mar. 20–20.	942	743	557	445	268	132												
Mar. 27–20.	941	458	439	372	130													
Apr. 3–20.	693	486	386	153														
Apr. 10–20.	538	237	115															
Apr. 17–20.	291	101																
Apr 24–20	109																	
Totals.	43,382	28,415	22,652	17,173	14,245	10,762	8,919	6,723	5,473	3,648	2,777	1,722	1,118	628	316	184	62	6

NOTE:—The above indicates that of the 4,641 men applying in the first week only six remained in the final week the fund was open.

GENERAL ADMINISTRATION

In order to co-ordinate the work of the various service branches of the department, both at head office and in the units, it was decided to create an Administration Branch of the department, under a Director of Administration, responsible to the deputy minister, for the following services: purchasing, sales, equipment, stores, general transportation, mechanical transport, accommodation, industries, laundries, farms, unit central registries, personal services, records.

This reorganization was put into effect at head office in June, 1920, and was carried out in the units in September, 1920.

ORGANIZATION OF THE ADMINISTRATION BRANCH

At Ottawa the Administration Branch under the Director of Administration is divided into five divisions, as follows:—

(1) Purchasing and Sales Division.
(2) Stores and Equipment Division.
(3) Pay and Personal Services Division.
(4) Accommodation Division.
(5) General Division.

(1) *The Purchasing and Sales Division* is responsible for all departmental purchases. This includes medical, vocational, orthopædic, dental, engineering, and general office equipment and supplies. During the year 1920 purchases amounted to an expenditure of approximately four and a half million dollars. This division is also responsible for the sale of all surplus equipment and stores. During the year approximately $250,000 worth of surplus stores and equipment was disposed of throughout the country at 68 per cent of cost price, nearly all of which had been in use by the department for a considerable length of time.

(2) *The Stores and Equipment Division* is responsible for all departmental stores, both as regards the supplies purchased and those issued; for maintaining a proper inventory of all departmental equipment and the distribution of same so that no new purchases of equipment are made when, by transfer from one district to another, this can be avoided; for boarding, appraisal, and storage of all departmental equipment and supplies, surplus or worn out, until disposal.

(3) *The Pay and Personal Services Division* is responsible for the awarding of pay and allowances for all men receiving treatment and for their dependents and for the keeping of proper records and documentation of same; proper burial of men who die while on the strength of the department and notification of next of kin; obtaining and forwarding information in answer to inquiries from former members of the forces.

(4) *The Accommodation Division* is responsible for all accommodation in use by the department; the checking of accounts for rentals; maintenance and repair of buildings and equipment; fuel supply and fire protection.

While this division has been placed, by the reorganization, under the Director of Administration, it was considered advisable that the Engineering Branch should continue to handle this work until the end of the present fiscal year.

(5) *The General Division* is responsible for the control of all transportation used, railway and automobile, and for the industries, farms, and laundries operated by the department.

UNIT ORGANIZATION

The organization in the units is similar to that at head office with five divisions corresponding to the above, under the direction of the Unit Director of Administration, who is responsible to the Director of Administration at head office for these services.

In addition the Unit Director of Administration is responsible for the direction in the unit of the following:—

Accounts Division—to the Supervisor of Expenditures.

Limb Fitting Depots—to the Director of Orthopædic and Surgical Appliances.

Business Administration of Pension Board—to the Board of Pension Commissioners.

Returned Soldiers' Insurance—to the Commissioners for Returned Soldiers' Insurance.

PURCHASING AND SALES DIVISION

PURCHASING SECTION

The Purchasing and Sales Division of the Department at Ottawa is under the control of the Chief Purchasing Agent, whose duty it is to purchase, for all branches of the department, supplies and equipment required, to secure invoices covering such purchases, check same and if correct pass them to the accountant for payment.

Purchases are made only on requisitions, which have been approved by either the head of the branch for which the goods are required or by the Unit Director of Administration. No purchase is made until requisition has been passed to Stores and Equipment Division and certification obtained that goods requisitioned for cannot be supplied from stores.

Tenders are called for from manufacturers and wholesalers, and are submitted by them in sealed envelopes, showing on the outside the number of quotation request and the date it is due to be opened. Such envelopes remain sealed until noon of the day shown thereon, when they are opened, tenders stamped and initialled, and prices scheduled in the office of the purchasing agent, in the presence of a representative of the Purchasing Commission of Canada.

The methods and routine followed are those approved by the Purchasing Commission of Canada, with whom the chief purchasing agent is in close touch.

Purchases in units are handled by a purchasing clerk, under the supervision of the Unit Director of Administration, who is authorized to place orders locally, up to the value of $50. Copies of all such orders are mailed as issued, to the chief purchasing agent, Ottawa, for audit. When requisitions are received in the units for material, the value of which is more than $50 but under $500, tenders are first obtained by the purchasing clerk from local manufacturers and merchants and the requisition is then forwarded with all such tenders to the chief purchasing agent, who either approves the requisition for local purchase or proceeds to obtain additional tenders, as the circumstances may warrant. Requisitions received in the unit offices for supplies, the value of which exceed $500, are forwarded direct to the chief purchasing agent, Ottawa, for action in accordance with the requirements of the Purchasing Commission of Canada.

By this system, not only can quick and efficient service be given to all branches of the department, but all purchases exceeding the sum of $50 are specially dealt with under the personal supervision of the chief purchasing agent and the Purchasing Commission of Canada. The chief purchasing agent is kept continually informed of all purchases made for the department throughout the Dominion, for smaller sums

than this. This control not only ensures purchases being made to the greatest advantage, but enables the chief purchasing agent to secure a uniformity of supplies at all points, which would otherwise not be possible. Furthermore, it has made possible the standardization of the greater part of equipment, which in this way can be purchased for many points at the same time and, consequently, in large quantities, resulting in the procuring of same at the lowest possible cost.

The accounting and checking system employed are such that advantage can be taken of cash discounts offered and the saving effected in this direction alone, is very considerable. The cash discounts referred to, are in addition to the trade discounts which the department secures.

The total purchases for the year, which include equipment, stores, fuel and food supplies, amount to approximately $4,430,919.77.

SALES SECTION

This section has been organized during this year to take care of the disposal of the department's surplus equipment and supplies, and consists of sales officers in each unit and at head office, who work under the direction of the chief purchasing agent, Ottawa. Sales requisitions, listing all surplus supplies and equipment in units, and including cost and appraisal prices, are passed by the Equipment and Stores Division to the chief purchasing agent, who, after obtaining approval of the minister, proceeds to dispose of the articles as follows:—

Requisitions covering material, the cost price of which does not exceed $50, are passed back to the units for local sale. Requisitions covering material of greater value are dealt with under the personal supervision of the chief purchasing agent, in conjunction with and with the approval of the Purchasing Commission of Canada.

While this sales organization has only been in active operation for less than five months, approximately $250,000 worth of surplus equipment and supplies have been disposed of, and although almost all of this material had been in use by the department for a considerable time, the price obtained for it was $170,000, or more than two-thirds of the cost. In addition, approximately $125,000 worth of surplus equipment has been transferred to other Government departments, in accordance with the provisions of P.C. 3017.*

STORES AND EQUIPMENT DIVISION

The Stores and Equipment Division was reorganized in September, 1920, for the purpose of co-ordinating the work and centralizing the control of all supplies and equipment belonging to the department. Prior to this reorganization, the control was distributed as follows:—

(*a*) An Equipment and Supplies Branch, with a superintendent in charge, responsible to the deputy minister, for all departmental equipment, other than vocational and orthopaedic, and for the general stores of the department.

(*b*) The Assistant Directors in the various units were responsible to the Superintendent of Equipment and Supplies for the control of all equipment and stores in their respective units.

(*c*) The vocational equipment and stores were under the control of the Director of Vocational Training, and the District Vocational Officers in the various Units were responsible for all vocational equipment and stores in their respective units.

* See Appendix IX page 159.

(*d*) There were also three main supply stores in Canada, under the control of the chief purchasing agent, Ottawa, one in the East, another in the West, and the third in Ontario. To these stores were sent all goods purchased in bulk, for distribution as required.

(*e*) There were also an Eastern, Western and Central Medical and Dental Stores, administered by the Director of Medical Services. The Orthopædic and Surgical Appliances Branch with a main store at Toronto, and local stores in each Unit, under the control of the Director of the Orthopædic and Surgical Appliances Branch.

The following changes in connection with the handling and control of departmental equipment and stores have taken place since the reorganization was made:—

(*a*) All departmental equipment is now controlled by the Equipment and Stores Division, and a period inventory has been taken and is maintained at head office. The Eastern, Western and Central Stores have been distributed and closed.

(*b*) The Vocational and General Stores have been amalgamated under the control of the Unit Director of Administration.

(*c*) The Eastern, Western and Central Medical Stores, being of a highly technical nature, are still controlled by the Director of Medical Services, but returns are forwarded to the Stores and Equipment Division at Head Office.

(*d*) The Orthopædic and Surgical Appliances Branch main stores is still under the control of the Director of Orthopædic and Surgical Appliances Branch, as it is attached to, and forms part of the orthopædic factory.

(*e*) Returns covering stores, are made to the Stores and Equipment Division at head office.

(*f*) The orthopædic stores in the units come under the control of the Unit Director of Administration.

In this manner control of all stores and equipment belonging to the department, is now centered in one division, under the Director of Administration.

The Stores and Equipment Division is also responsible for the proper listing on disposal ledgers, of all equipment and supplies that are declared surplus to requirements.

Before surplus supplies are passed to the Sales Division for disposal, a board is held and an appraisal made of the value of the equipment, as a guidance to the sales officer, in disposing of same.

During the last few months a complete inventory has been made of all equipment and supplies belonging to the department, necessitating the retention of a larger staff, for a longer period, than would otherwise have been required.

The total value of equipment on charge to the department as at December 31, was $2,654,558.86.

The total value of stores on hand as at December 31, was $1,400,222.52.

PAY AND PERSONAL SERVICES DIVISION

The Pay and Personal Services Division was formerly known as the Chief Inspector's Branch, but this latter title disappeared upon the reorganization which became effective August 31, 1920.

The functions formerly performed by the Chief Inspector's Branch were, in a measure, carried on by the Pay and Personal Service Division.

All records and documentation of patients receiving treatment by the department are maintained; the awarding of pay and allowances for general treatment as well as

for the insane ex-members of the forces and their dependents (this not only includes Canadians, but ex-members of the forces from within the Empire and the Allied countries with whom reciprocal arrangements have been made); clothing for patients; payment of war service gratuity for men on the strength of the Department of Soldiers' Civil Re-establishment; discipline in institutions; proper notification of next of kin in the case of death of patient and the proper burial and records of deceased patients; transportation, passenger and freight, repatriation of Australians and Chaplain Services covered the activities of the Chief Inspector's Branch.

CHANGES DUE TO REORGANIZATION

With the new organization whereby the medical services became responsible entirely for institutions, personnel and patients therein, all questions relating to discipline were taken over by the Treatment Branch under the same regulations promulgated by the Chief Inspector's Branch.

With the creation of the General Division all questions in relation to transportation ceased to become a personal service, and were taken over by the General Division.

CLOTHING

The free issue of clothing to patients on the strength of the department authorized under Order in Council P.C. 2325, dated November 21, 1919, ceased upon the passing of Order in Council P.C. 1549* and in lieu of free issue of clothing each patient was granted, as from July 1, a cash allowance at the rate of $7 per month. Clothing still in stores was available to patients on the repayment plan as long as the supplies lasted.

WAR SERVICE GRATUITY

During the year 674 applications for the payment of war service gratuity in a lump sum were considered by the committee in charge of this work. These were approved and paid. During the year war service gratuity accounts other than the above were completed to the number of 1,148.

EX-IMPERIALS

The year 1920 has seen a large increase in the number of ex-members of the Imperial forces applying for treatment and it became necessary to create machinery to deal with this class of patient. Conferences were held by the Chief Inspector with the Officer Paying Imperial Pensions and other officials of this department and a policy was drawn up governing treatment and the issue of pay and allowances to ex-members of the forces. Ex-Imperials were divided into two classes:—

(*a*) Those with a pre-war domicile in Canada or the United States of America.

(*b*) Those who have come to Canada or the United States since August 4, 1914.

The former are paid at the same rates as ex-members of the Canadian Expeditionary force by this department. Class (*b*) formerly paid by the Department of Soldiers' Civil Re-establishment have since June 1, 1920, been paid by the Board of Pension Commissioners for Canada, Imperial Section.

Certain difficulties in connection with the pay and allowances of ex-officers of the Imperial forces have recently been cleared up through correspondence between the Ministry of Pensions, England, and the Secretary, Board of Pension Commissioners Imperial Section, and a clear policy has now been established.

* See Appendix III, page 152.

INCREASE IN PAY AND ALLOWANCES

The rate of pay and allowances to ex-members in receipt of general treatment and their dependents was increased (by Order in Council 2139, effective September 1, 1920) † so that the allowances now paid are approximate to a total disability pension.

The allowances to the wife or to the dependent mother of an insane ex-member of the forces were increased by 25 per cent. This applied only to those living in Canada.

The rates for the dependent children of an insane man were increased in the case of the second child from $10 to $12 per month, while the third and each subsequent child was increased from $8 to $10 per month. The increases for children are applicable without regard to place of residence.

TRANSFERS TO BRITISH ISLES

Arrangements have been made by the department for the transfer of insane cases to British institutions where the immediate relatives of the patient are living in the British isles and making such request.

DEATHS, FUNERALS, PERSONAL EFFECTS

In the case of the death of a patient on the strength of the department, notification is immediately sent by telegram to the next of kin, if in Canada, by the Unit Director of Administration; if in the British isles notification is sent by the Chief of Pay and Personal Services Division. In the matter of funerals the department conforms as far as possible to the wishes of relatives, and burials are carried out in a befitting manner. Letters of condolence go forward to the next of kin in all cases. The personal effects of deceased patients are taken care of by the Unit Director of Administration, until advised by the Director of Records, Department of Militia and Defence, as to their disposal.

REPATRIATION OF AUSTRALIANS

During the year officials of the department have acted as agents for the Ministry of Repatriation in Australia and arrangements for the transportation of Australians who served in the Canadian Expeditionary Force and their dependents who desired to return to Australia were carried out.

CHAPLAIN SERVICES

Owing to the gradual demobilization of the Chaplain Services of the Department of Militia and Defence, it became necessary for the Department of Soldiers' Civil Re-establishment to make provision for carrying on religious work in hospitals, visitation of the sick in their homes, entertainment of men undergoing treatment, and for rendering personal service wherever possible to the returned man and his dependents. The department employs 15 full-time chaplains and 15 part-time chaplains for this purpose.

ASSISTANCE FOR RETURN TO RELATIVES—IN SPECIAL CASES

The Parliamentary Committee at the last session recommended that any cases coming to the notice of the Department of Soldiers' Civil Re-establishment covered

† See Appendix I, page 134.

by the following suggestions should be referred in each instance to the Governor General in Council with a special recommendation:—

1. That in the case of a tuberculous patient transferred from one locality to another for treatment, his wife, family and household effects be also transferred at the public expense.

2. That if in the case of a man who emigrated to Canada it is considered desirable for medical reasons that he be transferred to the custody and care of friends outside of Canada, the necessary transportation be provided at the expense of the public.

3. That where an ex-member of the forces has died owing to war disability, leaving a wife or children, and it is considered desirable that the family should be assisted to proceed to the original home of the wife, she or they be transferred at the expense of the public.

A limited number of persons have benefited under this recommendation, separate Orders in Council having been passed in each case.

EXTRACTS AND PRÉCIS OF MEDICAL DOCUMENTS

Considerable difficulty was experienced in securing medical information relative to the service and discharge of ex-members of the forces and it became necessary to maintain a staff in order to fulfil requests for medical information received from the Unit Directors of Administration, Medical Directors and District Vocational officers. During the year requests for medical documents have been filled as below:—

January	2,759
February	2,319
March	2,234
April	1,803
May	1,275
June	1,041
July	758
August	756
September	685
October	667
November	789
December	812
Total	15,898

During the same period Précis of Medical Documents, compiled by the Board of Pension Commissioners, were forwarded to this office and indexed and filed according to the schedule given below:—

January	8,238
February	3,504
March	3,360
April	3,145
May	2,661
June	1,480
July	1,138
August	872
September	666
October	856
November	768
December	895
Total	27,583

This division operates a head office section which is responsible for the pay and allowances of ex-Canadians and ex-Imperials receiving treatment in United States Public Health Service hospitals through the Bureau of War Risk Insurance. The accounting formerly done in this division has been transferred to the control of the Supervisor of Expenditures.

HEAD OFFICE PERSONNEL AND SALARIES PAID

The number of personnel employed by the Chief Inspector's Branch as at December 31, 1919, was 62, with a total monthly salary of $4,912.57. On December 31, 1920, the number is 32, and the cost per month $2,730.

THE FOLLOWING TABLE SHOWS THE ADMISSIONS, DISCHARGES, DEATHS AND TOTAL PATIENT STRENGTH MONTHLY

Number on strength December 31, 1919—7,777.

	Admissions	Discharges	Deaths	Strength
January	3,510	2,878	112	8,297
February	2,719	2,364	99	8,553
March	2,455	2,955	108	7,945
April	1,919	2,422	77	7,365
May	2,383	2,754	104	6,890
June	1,681	1,856	81	6,634
July	1,674	2,030	78	6,200
August	1,151	1,424	60	5,867
September	1,150	1,194	54	5,769
October	1,525	1,490	77	5,727
November	1,804	1,342	58	6,131
December	1,620	1,247	73	6,431
Total	23,591	23,956	981	

THE FOLLOWING TABLE SHOWS THE ADMISSIONS, DISCHARGES, DEATHS AND PATIENT STENGTH MONTHLY OF INSANE

	Admissions	Discharges	Deaths	Strength
January	14	38	6	901
February	45	15	1	930
March	25	29	2	924
April	22	20	4	922
May	54	33	3	940
June	19	25	8	926
July	29	38	2	915
August	24	10	3	926
September	15	20	3	918
October	24	27	9	906
November	10	12	2	902
December	10	19	..	893
Total	291	286	43	

These figures are included in the table above.

GENERAL TREATMENT IN UNITED STATES

Strength January 31, 1920—79.

	Admissions	Discharges	Deaths	Strength
February	14	7	3	83
March	65	18	4	126
April	44	22	4	144
May	18	13	5	144
June	28	39	4	129
July	41	34	4	132
August	35	28	..	139
September	40	30	2	147
October	23	21	3	146
November	58	47	..	157
December	85	84	5	153
Total	451	343	34	

Insane patients on strength included in above totals, 28.

GENERAL TREATMENT IN BRITISH ISLES

Number on strength October 31, 1920—315.

	Admissions	Discharges	Deaths	Strength
November	58	53	2	318
December	46	46	..	318

Insane patients included in above totals, 16.

TOTAL ON STRENGTH DECEMBER 31, 1920

On strength in Canada	5,960
On strength in United States	158
On strength in British Isles	318
Total	6,431

CUMULATIVE TOTALS

TOTAL NUMBER OF CLINICAL TREATMENTS TO DATE—573,199.

TOTAL NUMBER OF PATIENTS TREATED TO DATE—109,145.

Total insane treated to date	1,505*
Total tuberculosis treated to date	9,782
Total incurable treated to date	164
Total vocational students treated to date	3,941
Total officers treated to date	2,298
Total nursing sisters treated to date	273

TOTAL STRENGTH IN CANADA DECEMBER 31, 1920—5,960.

Ex-Canadians	5,752
Ex-Imperials	191
Ex-Newfoundlanders	11
Ex-French	1
Ex-Belgians	1
Ex-Australians	1
Ex-Americans	3
	5,960

GENERAL DIVISION

The General Division came into being on the 31st of August, 1920, the following specific duties being allocated to the Division at that time: transportation, industries, farms, laundries.

The division is divided into three sections under which the principal work of the branch is done.

GENERAL TRANSPORTATION

This section, which has been in operation under the Chief Inspector's Branch, was taken over on the 31st of August, 1920. The following is a summary of the work done for the year by the Transportation Section.

From December, 1919, to December, 1920, 71,050 transportation warrants were issued. Bills presented with original copies of transportation warrants attached were paid to the railroad and steamship companies and involved an expenditure of

* Exclusive of those treated by the Military Hospitals Commission.

$531,745.57. On each warrant the mileage and extensions, etc., were audited in this office before being paid. The distribution was as follows:—

Canadian National Railway	$171,845 30
Canadian Pacific Railway	316,771 29
Sundry railways	43,128 98
Total	$531,745 57

DISTRIBUTION OF EXPENDITURE FOR TRANSPORTATION

The expenditure of all units for transportation from December, 1919, to December, 1920, was distributed as follows:—

A Unit	$ 46,566 58
B Unit	56,394 08
C Unit	38,149 59
D Unit	81,204 24
F Unit	29,431 69
G Unit	39,026 98
H Unit	36,953 49
I Unit	50,990 64
J Unit	75,508 69
K Unit	28,532 35
L Unit	835 70
H.O.	47,023 69
Bills receivable	1,127 90
Total	$531,745 57

UNUSED TICKETS

Unused tickets amounting to $4,551.37 were returned to this office. These were submitted to the railroad companies for refund, and after cheque was received, were recredited to the Unit that forwarded same.

AMOUNTS RECOVERED FROM ALLIED GOVERNMENTS

The undermentioned amounts are charges incurred for transportation of soldiers of various Allied Governments. These charges are now recovered or are being collected from the following:—

Imperial Government	$3,590 07
Newfoundland Government	336 53
Australian Government	1,913 11
U. S. A. Government	136 49
Militia and Defence	17 95
Total	$5,994 15

OVERCHARGE ON TRANSPORTATION WARRANTS

Several accounts were forwarded to this office for collection with an overcharge, either in mileage or extension. These were returned to the railroad company and deductions made in this way amounted to approximately $500.

MISSUSED TRANSPORTATION

The amount of $607.98 was collected and credited to different warrants which had been changed to various points in Canada.

OUTSTANDING ACCOUNTS

There are still outstanding approximately 20,000 transportation warrants that were issued in the past year. Bills covering charges on these have not, as yet, been presented by the railroad companies for payment. A large percentage of these warrants are for transportation over the Canadian National Railway.

FREIGHT WARRANTS

The total charges on freight warrants, (Form 271) paid during the past year were of $113,119.79, as per the following distribution:—

Canadian National Railway	$24,767 02
Canadian Pacific Railway	43,257 20
Canadian Express	2,542 34
Dominion Express	27,556 33
Canadian National Express	11,582 45
Sundries	3,414 45
Total	$113,119 79

Each item on these freight warrants was classified and rates checked according to the official freight and express tariff. From December, 1919, to December, 1920, 8,600 freight warrants were issued.

Errors in freight accounts amounted to approximately $50, and were returned to their respective companies for correction.

DISTRIBUTION OF EXPENDITURE FOR FREIGHT

The expenditure of all Units for freight from December, 1919, to December, 1920, was distributed as follows:—

A—Unit	$ 34,783 81
B—Unit	2,053 18
C—Unit	1,376 09
D—Unit	4,044 70
F—Unit	25,377 20
G—Unit	2,955 64
H—Unit	15,586 34
I—Unit	9,647 20
J—Unit	5,161 84
K—Unit	2,452 78
Head Office	9,681 01
Total	$113,119 79

HALF-FARE CERTIFICATES—FORM 163

Half-fare certificates were obtained by the Units direct from the Canadian Passenger Association, Montreal during the year. The duplicate copies of these were forwarded to this office on Form 118 at the end of each month and after being checked, were filed away in case of further reference.

TOTAL EXPENDITURES

The total expenditure for the year in transportation, freight and express amounted to $644,865.36. The charges recovered on unused tickets and from Allied Governments, etc. amounted to $11,153.50, which leaves a total expenditure of $633,711.86.

TOTAL COST OF TRANSPORTATION TO DATE

Cost of transportation from April 1919 to December 1920	$733,472 20
Cost of freight from April 1919 to December 1920	122,995 05
Total	$856,467 25

STATISTICAL SECTION

A new section was created subsequent to the 31st of August, 1920, for the purpose of consolidating incoming returns. The following is a list of duties as carried out by that section:—

Weekly.—	*Due from.*—
Return of loans by Units for Current Week and cumulative totals to date.	Chief, Loans Division
Return of Local and H.O. sales by Units for current week and cumulative totals to date.	Chief, Purchasing Division
Return of Head Office and Unit purchases for current week and cumulative totals to date.	Chief, Purchasing Division
Return of Stores listed for disposal by Units for current week and cumulative totals to date.	Chief, Stores Division
Return of Condemnation Board Disposal showing cumulative totals.	Chief, Stores Division

Recapitulation of the above returns are made, statistical statements being compiled therefrom, for the Director of Administration, giving the following information:—

Weekly.—

Statistical data regarding operations in Loans Division.
Purchases by branches, including total number of tenders called for.
Head Office and Local Sales, showing cost, appraised and sales value including sales requisitions received and pending sale.
Hear Office and Unit Stores, listed for Disposal, showing cost and appraised values.
Condemnation Board Disposals, showing cost of articles, sales price, difference charged to Head Office and percentage of cost price received from sales.

Monthly.—

Head Office and Unit Administration Staff and salaries, showing cost per patient by Division.
Head Office and Unit Vocation Staff and salaries, showing cost per patient, cost per contact (Follow-Up), cost per Debtor (Loans) by Divisions.
Head Office and Unit Stores, showing amounts issued and on hand.
Head Office and Unit Equipment, showing amounts issued and on hand.

MECHANICAL TRANSPORT

This section was taken over on the first of December, 1920, from the Director of Mechanical Transport, who had supervised the work performed by the Mechanical Transport in all units of the department, from November 15, 1919, on which date there were 226 motor vehicles on charge to the various units throughout the service. In the past year these vehicles have all been inspected once by the former Director of Mechanical Transport, listed, and a thorough record system created in connection with each particular vehicle and its consumption of consumable products, repairs and maintenance generally. In addition to the foregoing inspection, these vehicles have been regularly inspected about once every two months by representatives of the Mechanical Transport Branch in the units.

Since November, 1919, no new vehicles have been purchased. Existing equipment has been repaired when necessary and has been kept in good running condition to perform the duties required in the areas. During the past year the number of vehicles on charge in the Units has been reduced by 123, forty of which have been disposed of, through sale, and eighty-three are now listed for disposal.

The cost of operation of Mechanical Transport generally, has been effected through the adoption of a policy of making small allowances to certain medical officers who constantly use their own motor vehicles on departmental business.

All vehicles on the public highway are kept insured under a blanket policy from year to year. Only vehicles which have been listed for disposal or those which are used for shop instructional work are not insured.

For the six months ending November 30, 1920, motor vehicles owned by the department gave a total of 138,821 hours' service out of the garage.

FARMS

A system has been arranged for, which will result in a series of monthly reports being received in this office giving a clear analysis of farm operations in connection with farms which are operated by the department for either training purposes or in connection with institutions. In this manner control of production from agriculture can be kept and a check placed upon the disposal of agricultural produce.

LAUNDRIES

A system of reporting laundry operations by units to Head Office has been established which enables this Division to control laundry operation throughout the service and by a system of circulating comparative statements, monthly, it is hoped materially to reduce laundry charges generally.

ENGINEERING BRANCH

The Engineering Branch during the past year, has carried on all correspondence with the Public Works Department relative to acquiring or vacating accommodation, together with outlining and inspecting major construction work being carried out by the Public Works Department for this department.

Maintenance of institutions in the way of repairs and minor extensions have been undertaken, together with the appointment and supervision of General Service staff, comprising engineers, firemen and coal trimmers.

By arrangement with the Department of Public Works the future maintenance of institutions of this department will, after March 31, 1921, be vested in that department with the exception of emergency and minor repairs, which will be continued by this department, a general service staff, consisting of carpenters, plumbers and electricians being placed on the staff of the institutions. To make this arrangement effective the Engineering Branch will gradually complete the personnel required and effect a reduction in the amount of work being carried out on work orders, referring all work of a major nature to the Department of Public Works.

During the past year 2,007 work orders, amounting to $447,087.15, were authorized and the work outlined in same will be completed by end of the present fiscal year. Certain construction work has been undertaken jointly by this department and the provinces of Alberta and Quebec. Plans and specifications were prepared by the Engineering Branch, and the work supervised by a departmental representative acting for both parties.

The number of premises under lease at January 1, 1920 was 136 with a yearly rental of $370,046.80. This number has been reduced to 96 at December 31, 1920, with reduction in rental to $272,532.99 or a net reduction of $97,513. 81.

Insurance has been carried on considerable property under lease, due to stipulation that same be carried by lessee. It has been found expedient to insure certain institutions held jointly by the department and other bodies.

This branch has certified all accounts in respect of engineering operations, coding the same for the Accounting Branch, and has prepared statements for the issue of cheques by that branch. During the past year the Engineering Branch has handled 9,060 accounts.

All requisitions pertaining to engineering fixtures originate in this branch, and in the case of coal, specifications are prepared and deliveries sampled; 48,704 tons of coal were requisitioned for during 1920 for the winter of 1920-21.

A close inspection is maintained by officers of the branch relative to fire protection in the department institutions; and it is gratifying to note the small percentage of loss caused by fire during the year.

ACCOUNTS AND AUDIT BRANCH

The Accounts and Audit Branch takes charge of all authorized expenditures and has control of all accounting in all branches and divisions of the department. This work embraces all the details of accounting of allowances paid to, or on behalf of, all ex-members of the forces, and includes the accounting of all phases of the work done in connection with treatment, training and service, and the preparation of cost, administrative, and financial statements and statistical records covering all classes of this work. It will readily be seen, therefore, that an enormous amount of detail work in connection with problems arising from these activities is handled by this branch.

The main phases of the work may be defined as follows:—

1. The supervision of all Departmental expenditures and receipts.
2. The disbursement and receipt of money.
3. The accounting and classification of all expenditures and receipts.
4. The auditing of all expenditures and receipts.

To deal with this phase of the problem, the functions of the branch have developed along the following lines:—

1. The revision, improvement and operation of an extensive and widespread accounting system covering problems of proceedure and practice, together with the creation of an auditing system which makes an administrative check on the entire work on the branch. The functions and results obtained from the work of this latter division of the branch will be reported on as a separate activity.

2. The preparation and examination of all vouchers supporting cash expenditures and receipts.

3. The payment of all expenditure vouchers by means of letter of credit cheques issued on the Bank of Montreal.

4. The recording and accounting of these payments and other transactions as they occur at the units and at Head Office.

5. The collection receipt deposit and recording of all incoming monies and funds derived from the various activities of the department to the credit of the Receiver General.

6. The preparation and compilation of accurate and appropriate cost and financial statements and reports showing, both in detail and in a summarized form, all expenditures and receipts.

7. The preparation of estimates of expenditures for submission to Parliament.

8. The payment and accounting of expenditures incurred in respect of all ex-members of the forces on behalf of Imperial and foreign Governments in accordance with reciprocal arrangements made with the various Governments concerned.

9. The advising, recommending and application of particular methods or systems of dealing with expenditures and the proper accounting thereof.

It will give some idea of what has been accomplished in this respect when the following details, figures and facts are considered:—

Departmental expenditures are classified into 295 different accounts, each and all of which, may be applicable to the 600 institutions, offices or hospitals operated by, or rendering service to the Department.

In addition to this, detailed records are kept of 11,000 real and personal accounts. At the time when the department was running at its peak load last March, ledger accounts were open covering the 9,000 members of the staff, the 26,000 students undergoing vocational training, and the 7,000 patients receiving treatment in hospitals and other institutions. While these figures have been largely reduced at the time of submission of this report, nevertheless, the great work involved in handling these activities took place this year. The statement shown below will enable one to visualize the activities of this branch at a glance. This statement shows the work handled in the three months, April, 1919, March, 1920, when the peak was reached, and September, 1920, when the department was running along more normal lines. The number of adjustments and monthly transfers involved in this large monthly amount of detail can readily be seen to require constant supervision and care so that the highest degree of efficiency and accuracy may be attained.

Items.	Months.		
	April, 1919.	March, 1920.	September, 1920
Number of staff	3,891	9,035	6,628
Total salaries paid	$361,036·00	$890,767·25	$686,171.14
Number of patients	5,643	6,860	4,756
Treatment pay and allowances	$329,265.30	$740,811.12	$247,419.46
Number of students	6,096	25,673	8,290
Vocational pay and allowances	$377,131.48	$2,709,698.06	$866,089.17
Expenditure for general accounts	$378,980.09	$2,057,809.86	$1,213,865.54
Total number of cheques issued	34,744	147,582	58,014
Refunds of expenditure	$27,445.57	$178,160.10	$209,513.17

SPECIAL FEATURES OF THE WORK

The general fiscal problem of the department has been accentuated, during the past fifteen months, by the rapid demobilization of the Canadian Expeditionary Force and the immigration of discharged soldiers from other countries, more particularly from Great Britain.

The routine work of the department was greatly increased at the very time when the Accounts Branch was building up an organization and defining the system to meet its new responsibilities. It was necessary to train a staff not only in their routine duties but to enable them to meet those personal situations which arose from dealing with ex-members of the forces in a state of anxiety or unrest. Much responsibility, therefore was left to the direction of the individual officers stationed in the Units, who were responsible for carrying out the policy of the department as laid down by Act of Parliament or Order in Council.

Payments to patients, students and members of the staff required promptness of action and involved dealing with a large number of more or less fixed payments and amounts. The heaviest portion of this work was covered during the last eighteen months. It was complicated by continual changes, by the ebb and flow of patients and students being taken on or discharged from the strength of the department, by a continuous call for investigation, adjustment and correction of amounts due to these individuals. Men and their dependents viewing things solely from their personal need or circumstances, made much demand on the judgment and discretion of the account-

ing staff coming in daily contact with them, who had to conform to necessary restrictive regulations, designed without prejudice to the men, to protect the interests of the Department and to safeguard the public funds, for which they were responsible.

Expenditures are not authorized by the Accounts and Audit Branch, but the examination and investigation of all details consequent upon the authority of these payments, is the main work of this branch. It is necessary to meet both creditors and beneficiaries whose accounts were either in question or in process of adjustment, that prompt payment of outstanding accounts could be met. The rapid progress towards a complete and smooth-running organization, issuing in promptness and efficiency, has justified the procedure and practice adopted, by the results which have been obtained.

MECHANISM OF THE BRANCH

The actual organization and machinery provided to deal with the general problem and its varying phases comprises a Unit accounting staff under the authority of a Unit Accountant, located in each of the principal cities of the Dominion. The accountant is required to examine the authority and pass upon expenditure vouchers, and, on the voucher being certified by the Unit Auditor, to pay the sum out of the funds entrusted to him for this purpose. The Accountant is responsible, through the Unit Director, to the Supervisor of Expenditures.

An audit staff, being a distinct and separate organization, responsible direct to Head Office, is also established at all Units. The duties and responsibilities of this section of the work are outlined in another portion of this report.

All vouchers submitted by creditors of the department are checked and certified by the officer who first authorized the expenditure. In the case of invoices for goods and materials purchased, the vouchers are first dealt with by the Purchasing Division then by the Accounting Division, where all vouchers are checked, classified and analyzed in accordance with the nature of the charge of service rendered; a record of the amount due to the creditor is kept in accordance with established commercial principles. Prior to payment all vouchers are properly distributed on the original book of account called an "Invoice Register." All vouchers are then audited and paid by means of cheque drawn on the Unit letter of credit, which letter of credit is established in the Bank of Montreal at Ottawa.

Staff pay lists and pay lists supporting payments to patients and students on the strength of the Department, are maintained by the Accounting Division and dealt with in a similar manner to that just described. Pay rolls and invoice registers are transmitted to Head Office in the same manner as registers covering vendors' accounts which are incorporated in the accounting records of the department.

A daily return of all cheques issued by the Units is made to Head Office for transmission to the Finance Department, and a monthly distribution of the amounts chargeable to the various appropriations granted by Parliament is prepared and rendered to Head Office for submission to the Auditor General of Canada.

The Unit Accountant is responsible for the deposit of all moneys received by him which are derived from the sale of supplies, the recovery of overpayments, proceeds from the sale of manufactured articles and refunds of every description. Vouchers are prepared supporting such refunds to the department and a deposit made daily of moneys collected, to the credit of the Receiver General of Canada. Remittance drafts and supporting vouchers are forwarded daily to Head Office. The Unit Accountant is also responsible for maintaining detailed stores accounting records by institutions, ledger cards or sheets, based upon commodity reports, and completed vouchers forwarded by the Unit storekeeper. Stores ledgers are kept for every class of goods handled, which ledgers are maintained in the Unit accounting office. Monthly reports, in terms of money, showing the balance of the stores on hand and the value

of the goods received and consumed, are rendered to Head Office. Journal vouchers covering all transactions affecting stores, transfers between Units and consumption or expenditure of commodities, are itemized and forwarded to Head Office at the time these transactions take place. Other details come under the administration of the Unit Accountant covering the general routine involved in handling a large variety of classified expenditures and revenue. The work of the Audit Branch, which is detailed later, covers all such activities, and authority is necessary before payments or entries are actually made.

THE FUNCTIONS OF HEAD OFFICE

At Head Office, a part of the Accounts and Audit Division performs duties similar to those being performed by the Unit accounting and auditing staffs, such as the examination and preparation of expenditure vouchers, the payment of these vouchers and the accounting of the expenditure involved. These expenditures are made for, and on behalf, of every Unit of the Dominion. In addition, Head Office makes payment of all foreign accounts, i.e., expenditures incurred outside of Canada. All pay and allowances to patients in the United States are dealt with by Head Office, as well as the disbursements involved in the care, treatment, maintenance, etc., of both Canadian and Imperial ex-soldiers in that country.

Since the 1st of January, 1920, there have also been maintained and dealt with in this office, all war service gratuity accounts, numbering 2,700, transferred by the Department of Militia and Defence, on account of men discharged by that department to the strength of this department.

The distinctive feature of the department's system of accounting is the method of transcribing and compiling details and figures reported by the Units to Head Office. Hollerith cards specially designed to embody the accounting information shown on the various documents of original entry, i.e., invoice register, refund voucher and journal, are punched in the Statistical Division of the branch at Head Office, according to the standing order number and institution code number to be debited or credited. The cards are balanced at intervals and the resulting statement is the same as a trial balance of ledgers and books of original entry in an ordinary commercial undertaking, the operation of punching these cards being equivalent to the making of a journal or other entry in the books of original record. Instead of posting these items to a ledger, the cards are automatically sorted, in a machine called the "Sorter," into institutions or offices and standing order, or whatever numbers are required, and the totals chargeable to each institution and standing order numbers corresponding thereto are summarized in another machine called the "Tabulator." These two operations are equivalent to those of posting the ledger, footing the debit and credit columns, and taking off the balances of the ledger accounts. The use of this system and the mechanical means of compiling and obtaining information saves a vast amount of detailed book-keeping, with consequent reduction of staff necessary to handle same. From the Hollerith cards all kinds of book-keeping and accounting cost facts may be obtained. Permanent records are kept of the analyzed and summarized details taken off the tabulating machine.

A section of the Head Office staff compiles summaries, as well as detailed statements of expenditures and receipts. In addition, this section prepares cost statements for the medical care of patients, the cost of training students, the cost of operating hospitals and other institutions by the department, and other cost reports of all sections of the work, for submission to the executive of the department.

It is from the Department of Finance, on authority of the Auditor General, that the Department of Soldiers' Civil Re-establishment obtains its letter of credit advances with which to make all payments of expenditure vouchers. In accordance

with the requirements of the fiscal system of the Dominion, daily detailed statements of expenditure, and monthly recapitulations, both of revenues and disbursements, by appropriations, are compiled and submitted to the Department of Finance and the Auditor General. The Accounting Division of the department must, therefore, work in close harmony and co-operation with both of these departments.

In June, 1919, a Supervisor of Expenditures was appointed to organize this branch of the work, and to co-ordinate and centralize the various accounting activities of the department. The rapid growth of the work undertaken by the Department of Soldiers' Civil Re-establishment, following the general plan of operations inaugurated by the Military Hospitals Commission, made it imperative to centralize the control of the accounting work and to develop better supervision over the Units.

The rapid expansion, due to the taking over of the administration of hospitals of the Militia and Defence Department, the necessity of providing instant accommodation for the rapidly transferred disability cases from overseas, and the great effort that was being made to provide vocational training for those who wished to take advantage of the provisions made by the Government, created considerable responsibility at the various Units throughout the Dominion.

As the organization developed, regulations of a more or less standardized form were laid down giving Head Office a better knowledge of the work in the Units and a more detailed insight into results achieved. In the work of this particular branch, which covered a large variety of technical problems in accountancy, it was necessary to train a staff to handle the work competently, which problem was all the more difficult because much of the work was of an entirely novel nature, and had not come within the business or technical experience of those who were asked to perform it.

REORGANIZATION—AUDIT BRANCH

The original accounting system covering the expenditures of the Military Hospitals Commission was sound in principle, but, in view of the largely increased expenditure, it was necessary that a more direct control should be established both over the work involved and over the staff administering it. No system of administrative check or audit had been formed, but at the close of 1919 the formation of an Audit Division was discussed and an Audit Branch formed as a distinct and separate organization whose sole duty was to verify and check all expenditures and receipts in the Units and at Head Office. The expenditures of the department were of such an intricate nature, and of such amounts, that a closer supervision and scrutiny of disbursements and receipts was decided upon. Independent financial reports from officers not interested directly in the spending or accounting of departmental funds was, therefore, looked upon as the best means to safeguard the administration of the money voted by Parliament. In so large a department situations continually developed which involved investigations, and reports by officers whose independence of local environment and conditions made findings more valuable from an administrative point of view.

A Chief Auditor is stationed in Head Office, responsible to the Supervisor of Expenditures. A Unit Auditor and necessary staff is stationed in each Unit. These auditors are considered in the light of Head Office officials, thus giving them an independence not otherwise obtainable. The duties of the Audit Division may briefly be outlined as follows:—

1. The pre-audit of expenditure vouchers such as vendors' invoices, accounts for services rendered, travelling expense claims, petty cash and other items before their payment out of letter of credit or contingency accounts.

2. The verification and audit of all pay-lists, pay and allowance ledger accounts, both of students undergoing training and of patients undergoing treatment; and of all salary and bonus pay-lists and accounts of members of the staff.

3. The checking and verification of all invoice registers and distribution of expenditure shown thereon.

4. Verification and audit of all petty cash, contingency funds or imprest accounts administered in each Unit.

5. The verification and audit of all loan accounts authorized under P.C. 2329, 1919.

6. The verification of all accounts with creditors of the department, and the audit of their monthly statements before payment.

7. The audit of the disbursements and pay-lists of the Orthopædic and Surgical Appliances Branch, and the verification of the factory journal and ledger.

8. The verification and audit at the source of all receipts and refund vouchers and returns of those made to Head Office.

9. Independent test inventories and the supervision of the methods of store-keeping and stores accounting in each Unit.

10. The revision and audit of all journal vouchers for transmission to Head Office.

11. Such special investigation or reports made under instructions from the Supervisor of Expenditures.

At the close of each month the Unit Auditor renders to Head Office a summarized report of the activities of the accounting and auditing staffs, of the volume of the work dealt with and the nature of any changes or improvements which have taken place. Detailed summaries of the various expenditures occurring in the Unit are reported on. Recommendations found advisable are made on the methods of accounting in force in each Unit, and a summary of the work covered by the auditor and his staff is also given.

The attention of Head Office is called to such items of expenditure or procedure which the Unit Auditor considers worthy of special reference, and a valuable help to the administrative work of the various heads of the branches, whose attention is drawn to these reports, is thereby obtained.

Travelling auditors are detailed to make special investigations of the books, records and accounts of institutions not operated by the department, but which render services to it on a cost basis, by receiving for treatment men on the strength of the department. Detailed reports of the accuracy of the methods adopted and of the charges made are thus obtained so that before payments of maintenance accounts, the department is in a position to know if it is getting the best return for its expenditure, and that the charges of these institutions are in accordance with the agreements made with the department and are just and regular.

VOCATIONAL AND TREATMENT PAY AND ALLOWANCES

All vocational pay and allowance ledger accounts throughout the entire department have been carefully audited. In each case the Unit Auditor has examined the Head Office authority (Form 34 and amendments thereto), without which no account can be opened or any payments made. Attendance records have been tested from time to time, calculations and extensions verified, duplicate copies of cheques issued compared with the ledger accounts and pay rolls certified correct. Accounts for ex-members of the Allied forces are specially notated, kept in separate sections of the ledgers, and all payments made thereon correctly charged to the respective Governments concerned.

All treatment pay and allowance ledger accounts have been fully audited, being checked against daily orders. Calculations and extensions have been verified, duplicate copy of cheques compared with ledger accounts, clothing issues carefully checked each month direct from spread sheets to ledgers and pay-rolls certified correct.

STAFF SALARIES AND COST OF LIVING BONUS

Staff pay accounts at Head Office and in all Units have been fully audited to date, the authority (Forms 119 and 119a) supporting each account having in all cases been examined. Calculations and extensions have been checked, pay-rolls certified correct and duplicate copy of cheques issued compared with ledger accounts.

All payments covering cost of living bonus have been compared with authorization by the assistant secretary embodied in form 106 and accounts and pay-rolls in connection therewith verified and certified correct.

WAR SERVICE GRATUITY ACCOUNTS

All war service gratuity accounts are kept at Head Office and have been fully audited from the very beginning and kept in balance with the control accounts (S.O. No. 16 & 16a). Cheques received from the Department of Militia and Defence have been accounted for by an examination of deposit receipts showing that all such funds have been deposited to credit of the Receiver General.

The authority for payments made out of this account has in all cases been produced and examined by the Audit Division. Interest calculations have been verified and original cheques in all cases are examined before despatch to payee. Pay-rolls, also, have been checked and certified correct. These accounts are very carefully and accurately kept and regularly balanced with the control account. The work of this division is entirely done at Head Office.

GENERAL AND VENDORS' ACCOUNTS.

General and vendors' accounts have received careful audit at Head Office and Units. All invoices from vendors have been carefully compared with copy of purchase orders and receiving slips and cash discounts, where allowed, have been deducted. Accounts not supported by purchase order and receiving slips have been certified to by the head of the branch concerned.

VOCATIONAL LOANS

All vocational loans made under P.C. 2329 have been carefully audited and are in all cases supported by Head Office authority which has been seen.

Regulations and Instructions, Chapter VI, Section XIII, Clause 7 (d) have been complied with.

HOSPITAL ACCOUNTS

Outside hospital accounts, in addition to being certified to by the Unit Medical Director, have been checked against daily orders and the rates charged verified with the institutional agreements.

TELEPHONE ACCOUNTS

A satisfactory check is kept of all long distance calls and any charges of a personal nature are promptly collected.

TELEGRAPH ACCOUNTS

Telegraph accounts have been properly certified by head of branch concerned and all messages of a personal nature collected.

POSTAGE ACCOUNTS

Postage records are kept in all Units, and all expenditure on this account is accounted for in detail and regularly audited.

INVOICE REGISTERS

All invoice registers throughout the entire department have been audited during the year and summaries, recapitulations and standing order numbers verified.

CASH ADVANCES AND PETTY CASH FUNDS

Cash advances made out of Head Office and Unit letter of credit accounts have been carefully audited, being in each and every case supported by Head Office authority.

Petty cash funds in all units are regularly audited each month and are, without exception, now being carefully handled.

RECEIPTS AND REFUNDS

Receipts and refunds have been fully audited each month by unit auditors at source of origin and the deposit of such funds to credit of the Receiver General verified by examinations of forms 81 and bank receipts covering same. Irregularities discovered during course of audit are immediately reported to Ottawa for action.

Ward occupational receipts have been fully audited in all institutions where such work is carried on.

SPECIAL INVESTIGATIONS

Since the Audit Division was organized in January, 1920, special investigations have been conducted at the following outside institutions for the purpose of ascertaining the cost of maintenance of patients on a per capita basis: Qu'Appelle Sanatorium; Lake Edward Sanatorium; Mountain Sanatorium; Kentville Sanatorium; Nova Scotia Technical School; Calgary General Hospital; Royal Jubilee Hospital.

At Head Office, Ottawa, and also in "G" Unit, all accounts including pay and allowances under P.C. 387, and staff pay accounts are fully and carefully audited and original cheques examined before distribution or delivery to payee. In all other Units, pay and allowance accounts and staff pay accounts are not fully audited until after actual payment has been made, and then duplicate copy of cheques only is examined, but it is expected that very shortly a full pre-audit can be made without causing delay either in delivery of cheques to payees or despatch of pay rolls, invoice registers and other returns to Head Office.

The main results of the past fifteen months may briefly be summarized as follows:—

(1) A prompt and accurate system of returns from the Units to Head Office has been developed. Delays in obtaining information have been removed and a condensation of details has taken place to provide an adequate survey of the work accomplished.

(2) Financial statements and returns have been re-drawn so as to show with greater force the relation of expenditures to the work of the department.

(3) A better analysis of information and accuracy has been produced with less staff and in a shorter period after the completion of transactions.

(4) A better control and a better knowledge as to the cost and financial condition of the department's operations has resulted.

(5) A more uniform and direct system of staff administration has been developed.

(6) The procedure and practice laid down for the accounting work has been so altered and improved that its functions are now being rendered automatically.

A closer financial and accounting relation has been established with various hospitals and sanatoria who treat or maintain patients on behalf of this department. This has led to comparative statements, both as regards institutions and provinces, which adds to the facilities of administration.

The present method of paying accounts in the Units instead of Head Office instituted at the beginning of the present fiscal year, April 1, 1920, in conjunction with the

formation of the Audit Division, has made possible a closer supervision over the authorization of pay and allowances, thus obviating the possibility of overpayments.

The system of accounting for cash receipts has been simplified and co-ordinated with other branches, prompt statements of refunds and returns to the Auditor General have been made on a much larger and more detailed scale without additional staff.

During the year means were provided to deal with the transfer of over 2,700 war service gratuity accounts from the Department of Militia and Defence, and to take care of large amounts expended and involved in maintaining and rendering services to ex-members of the Imperial forces, both in Canada and the United States of America.

That section of the Accounting Division dealing with recoverable accounts and responsible for the collection of accounts rendered or outstanding amounts due the department, is now a very important unit in the organization. All charges for maintenance, treatment or services rendered to ex-members of the Allied forces go through this section and it is necessary to examine detailed statements showing the individual's regimental number, his former military or naval unit, his rank, dependents and address, the nature of the service or treatment rendered, and the institution or organization from whom he received help. The original accounts are verified as to authority and paid to the institutions submitting them, either in Canada or in the United States, before repayment is received from the Allied Government under obligation. Over $1,000,000 has been collected this way, and accounts receivable totalling upwards of $500,000 are outstanding for which payment is expected in the near future.

A tri-monthly system of telegraphic reports of expenditures from every disbursing office of the department has been established. This provides an exact summary of the financial activities of the department to date, and shows how the appropriations are being expended week by week. Items of abnormal expenditure are reported on individually.

The attached statements give a clear summary of the financial work of the department, at the 31st December, 1920.

STATEMENT SHOWING PRINCIPAL ITEMS OF EXPENDITURE, FROM THE INCEPTION OF THE MILITARY HOSPITALS COMMISSION, FOR THE PERIOD OF FIFTY-SEVEN MONTHS ENDING MARCH 31, 1920, AND FOR THE PERIOD OF SIXTY-SIX MONTHS ENDING DECEMBER 31, 1920.

Item.	57 Months ending 31-3-20		9 Months ending 31-12-20		66 Months ending 31-12-20	
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Administration		5,772,616 12		2,227,460 05		8,000,076 07
Capital Expenditure—						
Buildings	6,909,391 81		515,284 25		7,424,676 06	
Equipment	3,233,637 88		43,345 92		3,190,291 96	
Live Stock	13,146 40		583 83		12,562 57	
		10,156,176 09		471,354 50		10,627,530 59
Working Expenditure—						
Cash Advances	89,179 12		231,484 31		320,663 43	
General Stores, etc	3,229,690 62		554,454 56		3,784,145 18	
Suspense	94 32		405 10		499 42	
		3,318,964 06		786,343 97		4,105,308 03
Medical Expenditures—						
Hospitals and Sanatoria	3,596,233 09		1,762,765 68		5,358,998 77	
Care of Patients	9,180,472 65		5,108,031 65		14,288,504 30	
		12,776,705 74		6,870,797 33		19,647,503 07
Vocational Expenditures—						
Training	7,664,685 09		3,032,839 76		10,697,524 85	
Farm and Garden	114,763 42		39,544 27		154,307 69	
		7,779,448 51		3,072,384 03		10,851,832 54
Information and Service		747,668 14		175,357 25		923,025 39
Pay and Allowances—						
Treatment	6,830,456 48		3,151,006 40		9,981,462 88	
Training	18,483,556 88		9,133,612 43		27,617,169 31	
		25,314,013 36		12,284,618 83		37,598,632 19
Accounts Receivable		187,307 37		553,833 36		741,140 73
Vocational Loans		43 724 83		393,753 42		437,478 25
Total Departmental		66,096,624 22		26,835,902 74		92,932,526 96
War Bonus		136,795 29				136,795 29
Cost of Living Bonus		1,192,858 88		835,590 75		2,028,449 63
Total Expenditure		67,426,278 39		27,671,493 49		95,097,771 88
War Service Gratuity		470,667 52		222,683 06		247,984 46

APPROPRIATION STATEMENT FOR THE NINE MONTHS ENDING DECEMBER 31, 1920.

Advances from the Department of Finance for the following services.	Repayments to Letter of Credit Accounts.	Foreign Drafts Purchased.	Overdraft from Fiscal Year 1919-20.	Gross Advances.	Deduct Refund of Expenditure.	Net Advances.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
SOLDIERS' CIVIL RE-ESTABLISHMENT.						
Vote 276—Capital: Buildings, Equipment, etc.	1,001,795 80	8,255 26	270,500 00	1,280,551 06	71,008 49	1,209,542 57
" 277—Care of Patients: including Limb Factory Operations	4,076,554 45	88,638 68	71,000 00	4,236,193 13	140,782 27	4,095,410 86
Vote 278—Vocational Expense: Cost of Training	1,191,607 45	12,055 77	233,550 00	1,437,213 22	196,846 04	1,240,367 18
" 279—Salaries: Administrative, Clerical, etc.	6,524,421 55			6,524,421 55	13,734 55	6,510,687 00
" 280 (a) Treatment Pay and Allowances	3,185,258 81	331 85		3,185,590 66	177,956 12	3,007,634 54
" 280 (b) Training Pay and Allowances	9,114,787 00		726,000 00	9,840,787 00	21,726 55	9,819,060 45
" 281—Operating Expense, Cost of Administration, Stores, etc.	2,000,591 81	100,826 74	345,400 00	2,446,818 55	460,540 73	1,986,277 82
" 528—Bonus Soldiers' Aid Com.	18,021 77			18,021 77	74 48	17,947 29
" 529—Interest on War Service Gratuity	25,590 55			25,590 55		25,590 55
" 530—Vocational Loans	403,208 82	2,386 92		405,595 74	10,045 46	395,550 28
Trust Fund No. 2—Pay and Allowance Balances, 1919-20	251,737 52			251,737 52	4,731 20	247,006 32
Casual Revenue, Deduct Refunds to					47,954 84	47,954 84
Departmental Advances and Refunds	27,793,575 53	212,495 22	1,646,450 00	29,652,520 75	1,145,400 73	28,507,120 02
Miscellaneous Consolidated Fund—						
Cost of Living Bonus						
Vote 363	837,869 61			837,869 61	1,455 59	836,414 02
War Service Gratuity	458,126 77			458,126 77	261,034 26	197,092 51
Total Advances and Refunds	29,089,571 91	212,495 22	1,646,450 00	30,948,517 13	1,407,890 58	29,540,626 55

RECIPROCAL ARRANGEMENTS WITH OTHER COUNTRIES

The reciprocal agreements which have been entered into between the Department of Soldiers' Civil Re-establishment and similar departments of other Governments, have been referred to elsewhere in this report under sections dealing with branch activities, notably the Medical, Dental, Accounting and Administrative Branches.

These agreements embody the following details:—

(1) Arrangements in Canada carried out by the department:

(*a*) Treatment and training of former members of the Imperial forces who were resident in Canada on the 4th August, 1914.

(*b*) Treatment of former members of the Imperial forces who were not resident in Canada prior to the war.

(*c*) Payment of allowances at Canadian rates to former members of the Imperial forces who were residents of Canada on the 4th August, 1914, and who are undergoing treatment or training and payment of allowances at British rates to those who were not so resident.

(*d*) Treatment of former members of the forces of United States of America resident in Canada.

(*e*) Treatment of former members of the Newfoundland forces resident in Canada.

(*f*) Treatment of former members of the French forces resident in Canada.

(*g*) Treatment of former members of the Belgian forces resident in Canada.

(*h*) Treatment of former members of the New Zealand forces resident in Canada.

(*i*) Payment of allowances at Canadian rates to former members of the New Zealand forces.

(*j*) Supply and maintenance of artificial limbs and other prosthetic appliances to former members of Imperial and other forces.

(2) Arrangements in Great Britain carried out by the Ministry of Pensions and the Ministry of Labour:—

(*a*) Treatment and training of former members of the Canadian forces resident in the United Kingdom.

(*b*) Payment of allowances at British rates to former members of the Canadian forces while undergoing treatment or training.

(3) Arrangements in the United States of America carried out by the Bureau of War Risk Insurance;—

(*a*) Treatment of former members of the Canadian forces resident in the United States.

(*b*) Treatment of former members of the Imperial forces resident in the United States.

(*c*) Examination of former members of the Canadian forces and pre-war residents of the British forces resident in the United States who make application for vocational training.

(4) Former members of the Canadian forces resident in Newfoundland, France, Belgium or New Zealand also are granted treatment for war disabilities in those countries by the respective Governments at the expense of the department. In the case of New Zealand allowances at the New Zealand rates are payable during treatment. Training may also be given in that country and New Zealanders may be trained in Canada.

(5) The arrangement with the British Government provides that the Ministry of Pensions will normally accept the finding of a medical board of the department as to the eligibility of a former member of the Imperial forces for treatment or training, based on his war disability.

(6) The actual out-of-pocket costs incurred by the Government giving the treatment or training are reimbursed by the Government on whose behalf such treatment or training is given.

(7) Arrangements have been made with the Colonial Office of the British Government for treatment to be given to former members of the Canadian forces requiring the same for a war disability who are resident in South Africa or any of the Crown colonies. In these cases, British rates are payable.

ADMINISTRATION IN THE UNITED STATES OF THE BENEFITS AVAILABLE TO THE MEMBERS OF THE CANADIAN EXPEDITIONARY FORCE.

The Parliamentary Committee on Pensions and Re-establishment at the last session of Parliament received certain suggestions from and on behalf of former members of the forces resident in the United States. The report of the committee contains the following:—

Suggestions

(1) That the committee consider, where in great centres like Chicago, New York and Boston there is a great number of Canadians, a representative of the Dominion Government should be appointed to consider such questions as re-establishment and to give advice on land settlement.

(2) That the allowances of patients undergoing treatment in the United States be issued with less delay by the Department of Soldiers' Civil Re-establishment.

(3) That disabled ex-members of the Canadian forces, resident in the United States, be provided with vocational training in that country at the expense of the Canadian Government.

Recommendations

(1) That the Department of Soldiers' Civil Re-establishment be asked to investigate the situation in the centres indicated, and at any other points which may appear to be necessary, with a view to ascertaining the extent of the problem and to making such recommendations to the Government as may be deemed advisable.

(2) It is understood that a rearrangement has been made between the Department of Soldiers' Civil Re-establishment and the Bureau of War Risk Insurance at Washington, whereby the delay referred to will be largely eliminated.

(3) It is not considered desirable to make any change in the present procedure, whereby an ex-member of the Canadian forces, resident in the United States, is required to come to Canada for retraining.

In order to ascertain the situation and to report thereon, the assistant deputy minister visited some of the principal centres in the United States and discussed the problems referred to with representatives of the Bureau of War Risk Insurance, the American Red Cross, Veterans' organizations, Patriotic and Relief Committees and British Consulates.

It was ascertained that the principal ground for criticism among the men undergoing treatment was delay in issuing pay and allowances, which delay was caused through difficulty in obtaining the necessary documents by which eligibility might be determined. It was arranged, in order to meet this difficulty, that the Bureau of War Risk Insurance, which had already instructed its representatives that all the

facilities at the disposal of former members of the United States forces should be also at the disposal of former members of the Canadian and British forces, should issue a circular letter, calling for greater expedition in the compilation and issue of documents and for a daily telegraphic report of admissions to, and discharges from hospital.

An inquiry was also made into the general question of relief and it was found that there are various organizations in the United States which have done magnificent work during the war and the immediate post-war period. The American Red Cross also indicated its willingness to extend its activities for the benefit of former members of the Canadian and British forces, through the Department of Civilian Relief. Up to that date, while many of the chapters of the American Red Cross had rendered splendid service, others had confined their activities to former members of the United States forces. The Director of Civilian Relief has issued a circular to the various chapters especially requesting that all the facilities of the Red Cross should be placed at the disposal of former members of the Canadian and British forces equally with former members of the United States forces.

Very great assistance has been given throughout by British Consuls-General and Consuls in the various cities of the United States and a great deal of valuable and gratuitous service has been rendered.

In order that former members of the forces in the United States may be aware of the facilities which have been provided by the Government of Canada a handbook of information has been issued by the department dealing briefly with such matters as medical treatment, vocational training, provision of artificial limbs and other appliances, allowances while undergoing treatment, death and funeral expenses, pensions, soldier settlement, war service gratuity, war records, medals, buttons, etc., service rendered by the American Red Cross and addresses of United States Public Health Service District Supervisors, through whom medical treatment is furnished under the control of the Bureau of War Risk Insurance. 20,000 copies of this handbook have been printed and are being distributed through the following channels: British Consuls, Red Cross, Bureau of War Risk Insurance, posts of the American Legion, British, Canadian and other Veterans' Associations, individual pensioners, men undergoing treatment, Canadian Clubs, Canadian banks, medical superintendents of hospitals, and others.

SOLDIERS' COMFORTS BRANCH.

Since the beginning of this undertaking in 1915, when the first sick and wounded soldiers returned to Canada, the work has grown and increased in scope and activity according to the needs of the men and the circumstances surrounding their individual disability, either in hospital or institution.

The past year has been a particularly active one, owing in part to the transfer of institutions from the Department of Militia and Defence to the Department of Soldiers' Civil Re-establishment, as well as the closing and opening of several of the department's own hospitals. This entailed safeguarding the donation furniture under the direction of this branch and the careful listing and refiling of each article, large or small, with its approximate value.

Furnishings.—As fast as the patients were transferred from one hospital to another, available spaces in the new institutions were filled with comfortable furniture and appropriate furnishings, such as, sofas; easy chairs; tables of various kinds;

pianos; gramophones and records; billiard tables with equipment; writing desks; book-cases and books; curtains; rugs; buffets; screens; jardiniere stands, etc., with verandah and deck chairs; rustic tables; awnings; marquees; and other furniture suitable for outdoor use, such as, hammock chairs, etc.

Recreation.—Athletic games of all kinds have been regularly supplied for indoor and outdoor recreation; also running-shoes for gymnasium use and for tennis; boots and skates for skating and hockey have also been regularly provided. The furnishing of roof gardens and basement canteens has been the means of giving pleasure and amusement to the men.

During the summer months, motor drives and picnics have been given and at other times, concerts and entertainments have been arranged.

Musical instruments.—Instruments, both for band and orchestra have been provided for the use of patients, particularly in tubercular and mental institutions, and where sufficient talent has been found, bands and orchestras have been given.

The results have been most successful. Musical competitions have been held between hospitals and in several cases prizes have been awarded after a keen contest. As the men have gained strength and been discharged, they have obtained positions in several instances with bands or orchestras adding thereby substantially to their income.

Wheel Chairs.—Indoor wheel chairs and tricycle chairs for outside use, Spinal lounges and spinal carriages have continually been provided to amputation and spinal cases. For the soldier who will never walk again, indoor and tricycle chairs have been given outright, as have also the spinal carriages.

The chairs are all kept in repair and new parts supplied when required. Those not in use during the winter months are stored by this branch, upon request, without cost to the patient. In instances where a disabled soldier has returned to his own home, either in a distant part of the Dominion or to the United States, where his people may be living, or has desired to return to England, the two chairs which he uses (indoor and tricycle) have been shipped to his new address upon request of the medical superintendent of the hospital which he is leaving.

Hospital Supplies, not on Issue.—During the winter months daily requisitions have been received and filled, for articles other than department issue or supplementary to it, such as, socks; sleeveless sweaters; shirts; underwear; scarves; pneumonia and operation jackets; bed jackets; extra-long dressing gowns; heavy sleeping suits; handkerchiefs; bandages of all kinds; bed pads; air cushions; hot water bottles and covers; arm slings; and personal property bags. Thousands of these articles have been distributed to hospitals during the past twelve months. The materials required have been purchased by department funds and made into garments, etc., by voluntary workers to whom warm thanks are due.

Tubercular Patients at Home.—As far as possible, requests from the Social Service Branch of the department have been filled for tubercular men who prefer to live at home. Their wants are varied and these requests have included blankets; sheets; pillow-cases; towels; heavy pyjamas; camp beds; verandah awnings; tents; sleeping caps; bed socks; and many other articles such as this branch provides for hospital use. Fruit, milk and eggs are also often given.

Soldiers About to Take Positions and Unemployed Soldiers.—Up to the present time no requests have been refused for soldiers who have the opportunity of taking positions out of town, provided they have their discharge papers and employment contract cards to show.

At various times an average of forty men a day have been outfitted, according to their requirements. This has often included heavy boots, extra warm clothing, and in the event of a long journey, food and various comforts have been provided.

There have also been a great number of men out of luck and out of work who have been helped with warm clothing and supplies. Coal, wood and food have been given after careful inquiry and investigation. This is called "emergency work," and has filled a definite want, particularly where there has been sickness and suffering in the homes of these soldiers.

Workshop, 287 Queen Street West, Toronto.—Owing to the increased activities of this branch entailed by the moving, repairing, packing, crating and shipping of furniture to and from the various hospitals, it was found necessary to obtain space for a workshop. This building is used for the purposes of storing, for repair work, shipping, etc., and for work-rooms for the voluntary workers who, week after week, have made the hospital supply articles, other than issue.

The repairing of furniture is efficiently carried out by men who have been overseas. Everything is made use of. Nothing is wasted. Old tapestry and chintz couch covers are cleaned on the premises and the best parts used to re-cover chairs; curtain poles are recut, cushions re-covered, screens remodelled; wicker furniture condemned in other workrooms as beyond repair has frequently been mended in the soldiers' comforts workshop in the most satisfactory manner. Often the repairing of old articles is a much more difficult task than making new furniture. It involves taking the old work completely off and practically remaking from the frame, up. It is work that requires a knowledge of carpentry, wood-finishing, staining, varnishing and enamelling. In the upholstering, kopek is used for the better class of work.

The packing, crating and shipping is completely looked after by the workshop staff.

Billard-tables throughout the hospitals are re-covered and kept in order. Pianos are regularly tuned and gramophones kept in condition. Should these articles require more attention, they are taken out of the hospital, placed in perfect condition and returned.

Exhibit of Soldiers' Work.—Thousands of visitors daily went through the large space allotted to this branch at the Canadian National Exhibition of 1920, when the usual exhibit of soldiers' occupational therapy and vetcraft shopwork was shown. Innumerable cases were filled with work from soldiers in hospitals in each province of the Dominion, and were classified under the headings of the eight major crafts, namely: wood; metal; textile; clay; basket-work; leather; drawing and printing. The last two included block-printing and stencilling.

Special endeavour was made to set a standard of excellency, in order to discourage inferior workmanship. The monetary value of the prizes was arranged to encourage competition in each group of articles for common use. There was also a special grouping of entries for articles, the making of which showed the overcoming of a physical handicap. This was illustrated in the making of a woven scarf on a peg loom, which showed skilful work and was the product of a soldier whose right hand and arm are completely incapacitated from the effects of burning by liquid fire. There were many other articles of handwork and specimens of design, done by men who have also suffered the loss of their right arms.

Judges were those who had a thorough knowledge by actual experience of the work exhibited. Six hundred entries were received.

The cases showing the work made by blinded soldiers were unusually attractive, and the cocoanut mats, also made by a blinded soldier, were on view, and it may be of interest to know that he has taken this means to support himself and wife.

Furniture was there in large quantities, and was of superior quality, much admired by visitors from Great Britain, New Zealand, Australia, the United States, as well as from Canada.

The exhibits demonstrated that the bedside work was not only for the betterment of the health of the men, but that it would be a future financial assistance to the

soldiers. Everything was on a higher grade than in previous years, noticeably in the copper, pottery, and the toys. One booth was set apart for the purpose of advertising the articles made for sale. This resulted in material advantage, financially, for the men.

Wicker furniture was mended during the entire exhibition by a soldier suffering from amputation who is now able to support his family through this work. Active work was also carried on in watch and clock repairing, as well as other occupations gained from the department's vocational training.

Sale of Soldiers' Work.—Since the month of October last, the sale of articles made by ill and disabled soldiers has been carried on by this branch.

Although the space used for a show room is small, the returns have been large. Christmas presents were bought in great numbers. No gifts seemed as popular as these articles. The prices are always arranged by the men themselves.

The work is sent in by the ward aide supervisors, to whom, twice a month, regularly, cheques are sent for the amount of sales made, to be passed on by them to the patients in their special hospitals to whom the articles belonged. Those discharged from hospitals bring in their work themselves and receive their cheques direct.

As the weeks have passed the sales have been trebled, the amounts received proving that the undertaking has been worth while and that by prompt and quick returns the men take a certain pride, no matter how ill they may be, in the results obtained.

Christmas Cheer.—In connection with the arrangements for Christmas, reports were received by this branch, from each Unit, giving the fullest and most complete details. In instances where only a certain amount was being given by patriotic societies and friends, the soldiers' comforts either added to or supplemented the giving. The buildings, where possible, were uniformly decorated, each ward having its own gaily trimmed Christmas tree, in the various hospitals, with presents for each man.

Day after day and evening after evening during the holidays different entertainments were given, both for the bed and convalescent patients, and special music was arranged for each entertainment. On Christmas morning each hospital had the usual carols. Over three thousand gift boxes were filled and sent out to hospitals and provincial institutions where there were soldier patients, which were much appreciated.

Owing to unemployment and other reasons, it was the duty of this branch to send supplies, such as meat, groceries, vegetables, etc., to several soldiers whose families would otherwise have been without Christmas cheer. A large number were cared for. Christmas trees were sent to club houses of several branches of the Great War Veterans' Association, with decorations for each tree, and for the children two hundred gifts. Men in the Royal Canadian Regiment at Stanley barracks were also looked after, presents given, with decorations for their mess-room and Christmas tree, as well as soldiers' children at Camp Borden. Gifts and decorations went in equal quantities.

DISABLEMENT FUND

The Disablement Fund was established in the summer of 1915, and it was at that time intended to raise a large amount of money, possibly five million dollars or more, for the following principal objects:—

"(1) To supplement the pension or compensation granted by the Government in cases where this is insufficient for the support of dependents.

"(2) To educate and train those who are unable to follow their previous occupations in other lines of industry and to supplement their earnings during the period of training.

"(3) To assist those totally incapacitated, either by the erection of permanent soldiers' homes, or as may be hereafter determined.

"(4) Generally to take such steps as may be deemed necessary or desirable to carry out the duty of the Canadian people to the men who have suffered in the defence of our national liberties."

Owing to the fact that the Government materially increased the pensions originally granted under the Pensions and Claims Board, and assumed responsibility for the payment of allowances during the period of vocational training, also erected and maintained such hospitals as were required, the main objects for which the fund was created have been otherwise dealt with.

In view of the foregoing, no general appeal was made for a large fund, and the amount subscribed, rather more than $120,000, was invested in Victory Loan and the interest allowed to accumulate.

It was found that certain ex-members of the forces could be assisted to a material degree by the issuing of short loans to tide over a period of emergency between the commencement of training or treatment and the first receipt of pay and allowances. Further, certain necessitous cases were discovered of ex-members of the forces who found themselves in need of temporary help where the nature of their claim was such that the Government could not render assistance.

While certain amounts loaned from the fund have not been recovered, in the main, the money has been turned over again and again.

District vocational officers and certain other officers of the department have been furnished with funds and have been authorized to grant loans to men on the strength of the department for training or treatment in cases where such loans will tide over a temporary emergency. Social Service workers have also been authorized to make small loans and to purchase household necessities where urgently needed. No donations of any kind are made with the exception of the purchase of household necessities, up to a sum not exceeding $5, without the authority of the assistant deputy minister.

A separate account is kept in the local branches of the Bank of Montreal by all officers of the department handling these funds and cheques are signed by two responsible officials of the unit. A monthly return is made to head office.

At the present time about 200 loans per month are being made averaging about $20 each. The following statement of account as at December 31, 1920, shows the standing of the fund:—

Dr.		Cr.	
War loan certificates, par value $135,500, held at cost	$130,033 91	Subscriptions to fund	$128,628 17
Total of Unit funds	12,053 00	Interest account, including interest received on War Bonds, interest on Head Office bank account and interest on various Unit accounts.	28,377 57
Sundry advances made by Head Office	8,015 96		
Loans considered unrecoverable	1,858 87		
Donations	3,057 33		
Balance at credit of fund in Bank of Montreal, Ottawa	1,986 67		
	$157,005 74		$157,005 74

CENTRAL REGISTRY

The Central Registry of the department, or the Filing Section, handles the compilation and issue of files, the opening and distribution of incoming and the collection and despatch of outgoing mail and telegrams. While the Central Registry may be of lesser importance than some of the other branches of the work, it is closely related to all, and the efficiency of the entire department is governed by the efficiency of this division. The system in operation is such that it is possible to secure files and data at a moment's notice, and a careful check is kept upon all mail, so as to ensure its being placed upon the proper files. It is the policy of the department, unless other information is required, to answer all incoming correspondence on the day it is received. This is only possible under a properly controlled Central Registry system. At the Head Office, all documents pertaining to a given subject or to a returned soldier, are placed upon one file, so that the whole history of a subject or a man, in so far as the department is concerned, is immediately available without further investigation. At the Units the same system has been followed, except where, through a separation of certain branches from the Head Office of the Unit, duplicate filing systems have been necessary.

The following figures cover the activities of Central Registry, Head Office, during the year, 1920:—

Files in Central Registry—	
Soldiers	158,209
General (subject and officers)	21,856
Confidential (staff)	16,208
Information and Service Branch, including Federal Emergency files	25,700
Total	221,973
Issued to branches	1,335,689
Average per week	26,686
Recharged (passed from branch to branch)	161,586
Average per week	3,107
Mail—	
Incoming—Total for year, pieces	962,208
Average per week	18,504
Outgoing—Total for year, pieces	897,792
Average per week	17,266
Telegrams—	
Incoming—Total for year	16,926
Average per week	326
Outgoing—Total for year	12,414
Average per week	239
Staff—	
January	141
December	89

The staff employed in Central Registry Head Office numbers 89, a reduction of 52 since January last when the peak load was reached. It is probable that the present staff will be further reduced in the near future. New files are being created at an average rate of 300 per week.

STAFF

The number of staff at the Head Office and Units, including Hospital staff, at the 31st December, 1919, was 8,121.

2. The peak load was reached in March of 1920, when the total staff of the department was 9,035.

3. At the 31st December, 1920, the total staff was 5,779.

4. During the period March 31 to December 31, 1920, the staff was reduced by 3,256 or 36 per cent.

5. The staff at December 31, 1920, was distributed as follows:—

Head Office, Ottawa	586
Nova Scotia and Prince Edward Island Unit	376
New Brunswick Unit	193
Quebec Unit	685
Eastern Ontario Unit	504
Central Ontario Unit	1,498
Western Ontario Unit	536
Manitoba Unit	256
Saskatchewan Unit	113
Alberta Unit	407
British Columbia Unit	609
Overseas Office	16
	5,779

The staff at December 31, 1920, was composed of the following:—

	Number	Percentage
Ex-service men, France	2,959	51·2
Ex-service men, England	552	9·4
Ex-service men, Canada	239	4·3
Civilians, rejected or exempted from military service	61	1·1
Civilians, boys under and men over military age	238	4·2
Civilians, male	95	1·6
Civilians, female	1,635	28·2
	5,779	100·0

(The term "ex-service men" includes nursing sisters as well as other ex-members of the forces.)

7. The classification of Head Office and Unit staffs according to war service:—

Head Office, Ottawa—	Number	Percentage
Ex-service men, France	141	24·06
Ex-service men, England	19	3·24
Ex-service men, Canada	6	1·03
Civilians, rejected or exempted from military service	8	1·37
Civilians, boys under and men over military age	56	9·55
Civilians, male	11	1·88
Civilians, female	345	58·87
	586	100·00
Nova Scotia and Prince Edward Island Unit—		
Ex-service men, France	196	52·13
Ex-service men, England	27	7·18
Ex-service men, Canada	12	3·19
Civilians, rejected or exempted from military service	5	1·33
Civilians, boys under and men over military age	10	2·66
Civilians, male	3	0·80
Civilians, female	123	32·71
	376	100·00

	Number	Percentage
New Brunswick Unit—		
Ex-service men, France	69	35·75
Ex-service men, England	19	9·84
Ex-service men, Canada	13	6·74
Civilians, rejected or exempted from military service	8	4 14
Civilians, boys under and men over military age	4	2·07
Civilians, male	12	6·21
Civilians, female	68	35·25
	193	100·00
Quebec Unit—		
Ex-service men, France	387	56·57
Ex-service men, England	43	6·27
Ex-service men, Canada	41	5·98
Civilians rejected or exempted from military service	9	1·34
Civilians, boys under and men over military age	25	3·58
Civilians, male	20	2·91
Civilians, female	160	23·35
	685	100·00
Eastern Ontario Unit—		
Ex-service men, France	216	48·85
Ex-service men, England	41	8·11
Ex-service men, Canada	36	7·1
Civilians rejected or exempted from military service	1	0·19
Civilians, boys under and men over military age	19	3·8
Civilians, male	7	1·4
Civilians, female	154	30·55
	504	100·00
Central Ontario Unit—		
Ex-service men, France	808	53·95
Ex-service men, England	239	15·95
Ex-service men, Canada	54	3·60
Civilians, rejected or exempted from military service	10	0 67
Civilians, boys under and men over military age	43	2 87
Civilians, male	14	0·93
Civilians, female	330	22·03
	1,498	100·00
Western Ontario Unit—		
Ex-service men, France	217	40·40
Ex-service men, England	45	8·40
Ex-service men, Canada	35	6·45
Civilians, rejected or exempted from military service	16	2·95
Civilians, boys under and men over military age	50	9·45
Civilians, male	10	1·94
Civilians, female	163	30·41
	536	100·00
Manitoba Unit—		
Ex-service men, France	158	61·77
Ex-service men, England	27	10·55
Ex-service men, Canada	7	2 66
Civilians rejected or exempted from military service	..	....
Civilians, boys under and men over military age	6	2·22
Civilians, male	2	0·9
Civilians, female	56	21·90
	256	100·00

Saskatchewan Unit—	Number	Percentage
Ex-service men, France	67	59·29
Ex-service men, England	11	9·73
Ex-service men, Canada	5	4·43
Civilians rejected or exempted from military service	..	....
Civilians, boys under and men over military age	2	1·77
Civilians, male	4	3·54
Civilians, female	24	21·24
	113	100·00

Alberta Unit—		
Ex-service men, France	257	63·02
Ex-service men, England	28	6·88
Ex-service men, Canada	15	3·67
Civilians, rejected or exempted from military service	2	0·52
Civilians, boys under and men over military age	4	1·04
Civilians, male	4	1·04
Civilians, female	97	23·83
	407	100·00

British Columbia Unit—		
Ex-service men, France	405	66·51
Ex-service men, England	50	8·21
Ex-service men, Canada	14	2·30
Civilians, rejected or exempted from military service	1	0·16
Civilians, boys under and men over military age	19	3·12
Civilians, male	8	1·31
Civilians, female	112	18·39
	609	100·00

Overseas Office—		
Ex-service men, France	8	50·0
Ex-service men, England	3	18·75
Ex-service men, Canada	1	6·25
Civilians, rejected or exempted from military service	1	6·25
Civilians, boys under and men over military age	..	....
Civilians, male	..	....
Civilians, female	3	18·75
	16	100·00

APPENDIX I

Order in Council P.C. 387, dated the 24th February, 1919, as amended by Order in Council (P.C. 2324) dated the 21st November, 1919, amended by Order in Council (P.C. 2139) dated the 15th September, 1920, and further amended by Order in Council (P.C. 2687) dated the 6th November, 1921.

Authority under which the Department of Soldiers' Civil Re-establishment may give treatment or training to former members of the Forces and may issue pay and allowances in connection therewith.

Whereas the Minister of Soldiers' Civil Re-establishment reports:—

That under Order in Council (P.C. 1366) dated 22nd June, 1918, certain powers were conferred upon the Department of Soldiers' Civil Re-establishment in respect to former members of the naval and military Forces of Canada, and His Majesty's Allies in the present war.

That experience has shown that it is necessary to modify certain of these powers, and to extend others.

That the question of providing retreatment for former members of the Forces in cases where the disability is not clearly due to service, has been considered by the department, and the following ruling has been made:—

> "When any ex-soldier applies for retreatment, and it is questionable whether his disability is due to, or aggravated by service, the Unit Medical Director should give the ex-soldier the benefit of the doubt, if in his opinion, the general resistive power of the ex-soldier against disease has been lowered by war service to such a degree that it has induced the disability from which he suffers when he presents himself for retreatment."

That on the return of a member of the Forces from overseas, it has been found in many cases that there is a lowered physical resistance, which sometimes results in a disability not directly attributable to war service, but which undoubtedly is indirectly caused thereby. It is considered that this lowered resistance will prevail for some time after the retirement or discharge of the former member of the Forces, and that the department should be empowered to grant treatment and medicine only, to all former members of the Forces who fall ill during the twelve months following the date of their retirement or discharge, when such treatment or medicine is not necessitated by a war disability.

That it may be pointed out that in Great Britain either through the Ministry of Pensions or through National Health Insurance, provision is made for the grant of free treatment for all disabilities, when such incapacitate a man for work.

And whereas it is expedient to authorize the Department of Soldiers' Civil Re-establishment, hereinafter called the department, as hereinafter set forth, such authority to supersede the authority granted under the Order in Council (P.C. 1366) dated 22nd June, 1918.

Therefore, His Excellency the Governor General in Council, under the powers vested in His Excellency by the War Measures Act, 1914, or by any other enabling authority, is pleased to order and it is hereby ordered as follows:—

Treatment and training persons eligible for.

1. The provisions of the Order in Council of the 21st February, 1918 (P.C. 432) with respect to treatment and training, shall extend and apply to all persons who have served in the Canadian naval or military forces of His Majesty during the present war and who have been retired or discharged therefrom and who may now or hereafter be resident in Canada, and may, in the discretion of the department be extended to all persons who have served in the naval or military forces of His Majesty or any of His Majesty's Allies, during the present war and who have been retired or discharged therefrom and who may now or hereafter be resident in Canada and who were bona fide resident in Canada at the outbreak of the present war (hereinafter referred to as former members of the forces), subject as follows:—

(*a*) Any former member of the forces suffering from a disability, which in the opinion of a naval or military medical board or of a medical officer of the department, is due to or was aggravated by service, and which disability, in the opinion of such board or officer prevents such former member of the forces from obtaining or continuing employment, shall be entitled to medical or surgical treatment and to such allowances as are provided herein for former members of the forces suffering from a disability preventing employment.

(*b*) Any former member of the forces resident in Canada who, within twelve (12) months after retirement or discharge from the forces or, if he has been transferred to the department by the Department of Militia and Defence, or the Department of the Naval Service, for further continuance of treatment, within twelve (12) months of the completion of such treatment, requires medical or surgical treatment for a disability which is not due to or aggravated by service, shall be entitled to such medical or surgical treatment, provided that such disability is not due to vice or misconduct on the part of such former member of the forces, and that it shall be competent for a medical officer of the department to decide whether such disability is or is not due to such vice or misconduct; and provided also, that the granting of such treatment shall not entitle such former member of the forces to receive pay and allowances from the department, nor shall it be deemed in any way to entitle him to pension in respect of any disability not due to or aggravated by service.

(*c*) Any former member of the forces suffering from a disability which, in the opinion of a naval or military medical board, or of a medical officer of the department is due to or was aggravated by service, and which in the opinion of the Director of Vocational Training of the department, prevents such former member of the forces from returning to his previous trade or principal occupation, shall be entitled to retraining for a new occupation in accordance with the regulations of the department, and to such allowances as are provided herein for former members of the forces undergoing retraining.

Treatment and training provisions

2. The department may, from time to time, and in its discretion, make arrangements through the Officer Paying Imperial Pensions at Ottawa, or with the Government of any of His Majesty's Dominions for the treatment

of H.M Forces other than Canadian.

and training of all persons who have served in the naval and military forces of His Majesty other than those of the Canadian forces during the present war, and who have been retired or discharged therefrom and who may now or hereafter be resident in Canada, whether bona fide resident in Canada at the outbreak of the present war or not and may render accounts for the cost of such treatment or training and may, subject to such arrangements and to the provisions of clause 1, during the period of such treatment or training pay such persons and their dependents the allowances hereinafter set out.

Treatment and training arrangements for ex-members of C.E.F. outside of Canada.

3. The department, may from time to time, and in its discretion, make arrangements for the treatment and training of all persons who have served in the Canadian naval and military forces of His Majesty during the present war, and who have been retired or discharged therefrom and who may now or hereafter be stationed or resident outside of Canada, and may pay the cost of such treatment or training and may, subject to such arrangements and to the provisions of clause 1, during the period of such treatment or training, pay such persons and their dependents the allowances hereinafter set out.

Treatment and training provisions regarding ex-members of Allied Forces.

4. The department, with the approval of the Governor in Council, may from time to time, and in its discretion make arrangements with the Governments of His Majesty's Allies for the treatment and training of all persons who have served in the naval or military forces of His Majesty's Allies during the present war, and who have been retired or discharged therefrom and who may now or hereafter be resident in Canada, whether bona fide resident in Canada at the outbreak of the present war or not, and may render accounts for the cost of such arrangements and may subject to the provisions of clause 1, during the period of such treatment or training pay such persons and their dependents the allowances hereinafter set out.

Training allowances. to men without dependents.

5. The allowances payable while he is undergoing training by the department, for a former member of the forces who is without dependents shall be seventy-five dollars ($75.00) per month.

Training allowances to men with partial dependents.

6. The allowances payable while he is undergoing training by the department for a former member of the forces, who has neither a wife nor any children, but who has a person or persons partially dependent upon him shall be seventy-five dollars ($75.00) per month, and the department may in its discretion pay to such partially dependent person or persons such allowances as may, in the opinion of the department, be deemed necessary, provided that the total allowances paid to or on account of such partially dependent person or persons shall not exceed an amount of twenty-five dollars ($25.00) per month.

Training allowances to married men.

7. The allowances payable while he is undergoing training by the department, for a former member of the forces, who has a wife, or a wife and child, or a wife and children, and for such dependent or dependents shall be as follows:—

(*a*) For such former member of the forces, one hundred dollars ($100.00) per month.

(*b*) for one child, fifteen dollars ($15.00) per month.

(*c*) for two children, twenty-seven dollars ($27.00) per month.

(*d*) for three children, thirty-seven dollars ($37.00) per month.

(*e*) for more than three children, thirty-seven dollars ($37.00) per month plus ten dollars ($10.00) per month for each child in excess of three.

Provided that the department shall pay direct to the wife the sum of fifty dollars ($50.00) out of the amount payable to the former member of the forces plus the allowances for children.

Training allowances to widowers with children.

8. The allowances payable, while he is undergoing training by the department, for a former member of the forces who is a widower with a child or children and for such dependent or dependents, shall be as follows:—

(*a*) For a former member of the forces and one child an amount not exceeding ninety-five dollars ($95.00) a month.

(*b*) for such former member of the forces and two children an amount not exceeding one hundred and five dollars ($105.00) a month.

(*c*) for such former member of the forces and three children, an amount not exceeding one hundred and fifteen dollars ($115.00) a month.

(*d*) for such former member of the forces and more than three children, one hundred and fifteen dollars ($115.00) a month, plus ten dollars per month for each child in excess of three.

Provided that the department may in its discretion pay to a guardian or other person having charge of any such child or children, such portion of the amounts set forth in this clause as it may deem necessary and may deduct the amount so paid from the allowances payable to the former member of the forces.

Training allowances to men with dependents other than wife and children.

9. The allowances payable, while he is undergoing training by the department, for a former member of the forces who has neither a wife nor any children, but who has a parent or parents, or a person or persons in the place of a parent or parents, or a brother or a sister, or brothers or sisters, any of whom are wholly or mainly dependent upon him for support, and for such dependent or dependents shall be as follows:—

(*a*) For such former member of the forces, seventy-five dollars ($75.00) per month.

(*b*) for such parent, an amount not exceeding twenty-five dollars ($25.00) per month.

(*c*) for such parent and one such brother or sister, an amount not exceeding forty dollars ($40.00) per month.

(*d*) for such parent and two such brothers or sisters, an amount not exceeding fifty-two dollars ($52.00) per month.

(*e*) for such parent and three such brothers or sisters, an amount not exceeding sixty-two dollars ($62.00) per month.

(*f*) for such parent, and more than three such brothers or sisters, sixty-two dollars ($62.00) per month, plus ten dollars per month for each of such brothers or sisters in excess of three.

(*g*) for one such orphan brother or sister an amount not exceeding twenty dollars ($20.00) per month.

(*h*) for two such orphan brothers or sisters an amount not exceeding thirty dollars ($30.00) per month.

(*i*) for three such orphan brothers or sisters, an amount not exceeding forty dollars ($40.00) per month.

(*j*) for more than three such orphan brothers or sisters, forty dollars ($40.00) per month, plus ten dollars ($10.00) per month for each of such orphan brothers or sisters in excess of three.

Provided that if such former member of the forces has two parents wholly or mainly dependent upon him for support, one of them shall, for the purpose of estimating the allowances payable in respect of such dependents, be regarded as a brother or sister.

Training allowances are maximum.

10. The allowances set out in clauses (8) and (9) for children or widowers or for parents, or for brothers or sisters, shall, subject to the provisions of clause 13 be the maximum allowances payable for such dependents, but if in the discretion of the department, less amounts are sufficient for the maintenance of such persons the department may award such less amounts.

Training-limitation of payment under one clause only; what children may be included.

11. No allowances shall be payable while he is undergoing training by the department for a former member of the forces or for his dependent or dependents under more than one of clauses (5), (6), (7) and (9) but any person or persons to whom a former member of the forces who is undergoing treatment or training by the department stands in loco parentis shall, at the discretion of the department for the purpose of estimating the allowances payable to such former member of the forces and for such dependent or dependents, be regarded as his child or children.

Treatment and training-limitation of dependents. Department to decide dependency.

12. No allowances shall be payable while he is undergoing treatment or training by the department, for any dependent or dependents of a former member of the forces, other than those mentioned in clauses (6), (7), (8) (9) and (11), and the decision whether or not a person is dependent upon a former member of the forces shall rest with the department, and any allegation of dependency shall be corroborated by such evidence as may from time to time be required by the department.

Training deduction for subsistence.

13. (*a*) In cases where a former member of the forces, while undergoing training by the department, is subsisted by the department the sum of $30.00 per month (to cover cost of such subsistence) shall be deducted from the pay and allowances of such former member of the forces, provided that when such former member of the forces has a dependent or dependents for whom allowances are payable under this Order in Council, and with whom he is residing at the commencement of his training by the department and owing, to his undergoing training is unable to continue to reside with such dependent or dependents, or finds it necessary, with the approval of the department to remove such dependent or dependents, to another place of residence, the sum of twenty-two dollars only shall be deducted, and the allowances payable to or on account of such dependent or dependents may in the discretion of the department be increased by $8.00 per month.

(*b*) In cases where a former member of the forces who while undergoing training is not subsisted by the department, and who has a dependent or dependents for whom allowances are payable under this Order in Council with whom he was residing at the commencement of his training, is, owing to his undergoing training, unable to continue to reside with such dependent or dependents or, finds it necessary, with the approval of the department to remove such dependent or dependents to another place in order to continue to reside with them the allowances payable for such former member of the forces under this Order in Council shall be increased by an amount of eight dollars per month, and the allowances payable to or on account of such dependent or dependents shall also be increased by an amount of eight dollars a month. Training additional allowances in special cases.

14. The allowances payable, while he is undergoing treatment or training by the department, for a former member of the forces or for the wife of a former member of the forces shall be paid direct to him or her unless in the discretion of the department, it is deemed advisable to pay such allowances to such other person as the department may determine, and the allowances payable, while he is undergoing treatment or training by the department, for the dependent or dependents of a former member of the forces other than his wife, shall be paid to such person as the department may determine. Treatment and training—manner of payment.

15. If a former member of the forces is unmarried or a widower at the time his training is approved by the department and marries during the progress of his training, the allowances for a married former member of the forces, shall be paid to him from the date of his marriage, or in the event of the interruption of his training on account of his marriage, from the date of the resumption of his training, instead of the allowances he or his dependents, if any, were receiving prior to his marriage. Training—men married during.

16. (*a*) The allowances payable while he is undergoing treatment by the department for a former member of the forces passed immediately on discharge by the Department of Militia and Defence or by the Department of the Naval Service to the department for further treatment which prevents him from obtaining employment, and for a former member of the forces who is accepted by the department for treatment for a recurrence of disability due to or aggravated by service which prevents him from obtaining or continuing employment and for his dependent or dependents shall be as per the following schedules:— Treatment—pay and allowances.

SCHEDULE 1.—SINGLE MAN IN HOSPITAL.

Private, Bombardier, 2nd Corporal and Corporal, thirtyeight dollars ($38.00) per month.
Sergeant, forty-five dollars ($45.00) per month.
Squadron, Battery or Company Q.M. Sergeant, Orderly Room Clerk, Pay Sergeant, fifty-one dollars ($51.00) per month.
Squadron, Battery or Company Sergeant-Major, Colour-Sergeant, Staff-Sergeant, fifty-four dollars ($54.00) per month.
R. Q. M. Sergeant, sixty dollars ($60.00) per month.
Sergeant-Major (without warrant), sixty-one dollars and fifty cents ($61.50) per month.
Sergeant-Major (Warrant Officer), sixty-nine dollars ($69.00) per month.
Lieutenant, ninety dollars ($90) per month.
Captain, one hundred and thirteen dollars ($113.00) per month.
Major, one hundred and forty-three dollars ($143.00) per month.
Lieutenant-Colonel, one hundred and eighty dollars and fifty cents ($180.50) per month.
Colonel, two hundred and eighteen dollars ($218.00) per month.
Brigadier-General (Commanding Brigade) four hundred and twenty-three dollars ($423.00) per month.
Major-General (Commanding Division) six hundred and sixty-three dollars ($663.00) per month.

SCHEDULE 2.—SINGLE MAN AT HOME.

Private, Bombardier, 2nd Corporal and Corporal, sixty-eight dollars ($68.00) per month.
Sergeant, sixty-nine dollars ($69.00) per month.
Squadron, Battery or Company Q.M. Sergeant, Orderly Room Clerk, Pay Sergeant, seventy-five dollars, ($75.00) per month.
Squadron, Battery or Company Sergeant-Major, Colour-Sergeant, Staff-Sergeant seventy-eight dollars ($78.00) per month.
R. Q. M. Sergeant, eighty-four dollars ($84.00) per month.
Sergeant-Major (without warrant), eight-five dollars and fifty cents ($85.50) per month.
Sergeant-Major (Warrant Officer), ninety-three dollars ($93.00) per month.
Lieutenant, one hundred and thirty-four dollars ($134.00) per month.
Captain, one hundred and sixty-four dollars ($164.00) per month.
Major, one hundred and ninety-four dollars ($194.00) per month.
Lieutenant-Colonel, two hundred and thirty-one dollars and fifty cents ($231.50) per month.
Colonel, two hundred and sixty-nine dollars ($269.00) per month.
Brigadier-General (Commanding Brigade), four hundred and seventy-three dollars ($473.00) per month.
Major-General (Commanding Division), seven hundred and thirteen dollars ($713.00) per month.

SCHEDULE 3.—MARRIED MAN IN HOSPITAL.

Private, Bombardier, 2nd Corporal and Corporal—
Wife only, seventy-nine dollars ($79.00) per month.
Wife and one child, eighty-eight ($88.00) per month.
Wife and two children, ninety-seven dollars ($97.00) per month.
Wife and three children, one hundred and five dollars ($105.00) per month.
Wife and four children, one hundred and thirteen dollars ($113.00) per month.
Wife and five children, one hundred and twenty-one dollars ($121.00) per month.
Wife and six children, one hundred and thirty dollars ($130.00) per month.

Sergeant—
Wife only, eighty-five dollars ($85.00) per month.
Wife and one child, ninety-four dollars ($94.00) per month.
Wife and two children, one hundred and one dollars ($101.00) per month.
Wife and three children, one hundred and six dollars ($106.00) per month.
Wife and four children, one hundred and thirteen dollars ($113.00) per month.
Wife and five children, one hundred and twenty-one dollars ($121.00) per month.
Wife and six children, one hundred and thirty dollars ($130.00) per month.

Squadron, Battery or Company Q.M. Sergeant, Orderly Room Clerk, Pay Sergeant—
Wife only, ninety-one dollars ($91.00) per month.
Wife and one child, one hundred dollars ($100.00) per month.
Wife and two children, one hundred and seven dollars ($107.00) per month.
Wife and three children, one hundred and twelve dollars ($112.00) per month.
Wife and four children, one hundred and seventeen dollars ($117.00) per month.
Wife and five children, one hundred and twenty-two dollars ($122.00) per month.
Wife and six children, one hundred and thirty dollars ($130.00) per month.

Squadron, Battery or Company Sergeant-Major, Colour-Sergeant, Staff-Sergeant—
Wife only, ninety-four dollars ($94.00) per month.
Wife and one child, one hundred and three dollars ($103.00) per month.
Wife and two children, one hundred and ten dollars ($110.00) per month.
Wife and three children, one hundred and fifteen dollars ($115.00) per month.
Wife and four children, one hundred and twenty dollars ($120.00) per month.
Wife and five children, one hundred and twenty-five dollars ($125.00) per month.
Wife and six children, one hundred and thirty dollars ($130.00) per month

R. Q. M. Sergeant—
Wife only, one hundred dollars ($100.00) per month.
Wife and one child, one hundred and nine dollars ($109.00) per month.
Wife and two children, one hundred and sixteen dollars ($116.00) per month.
Wife and three children, one hundred and twenty-one dollars ($121.00) per month.
Wife and four children, one hundred and twenty-six dollars ($126.00) per month.
Wife and five children, one hundred and thirty-one dollars ($131.00) per month.
Wife and six children, one hundred and thirty-five dollars ($135.00) per month.

Sergeant-Major (without warrant)—
Wife only, one hundred and one dollars and fifty cents ($101.50) per month.
Wife and one child, one hundred and ten dollars and fifty cents ($110.50) per month.
Wife and two children, one hundred and seventeen dollars and fifty cents ($117.50) per month.
Wife and three children, one hundred and twenty-two dollars and fifty cents ($122.50) per month.
Wife and four children, one hundred and twenty-seven dollars and fifty cents ($127.50) per month.
Wife and five children, one hundred and thirty-two dollars and fifty cents ($132.50) per month.
Wife and six children, one hundred and thirty-six dollars and fifty cents ($136.50) per month.

Sergeant-Major (Warrant Officer)—
Wife only, one hundred and fourteen dollars ($114.00) per month.
Wife and 1 child, one hundred and twenty-three dollars ($123.00) per month.
Wife and 2 children, one hundred and thirty dollars ($130.00) per month.
Wife and 3 children, one hundred and thirty-five dollars ($135.00) per month.
Wife and 4 children, one hundred and forty dollars ($140.00) per month.
Wife and 5 children, one hundred and forty-five dollars ($145.00) per month.
Wife and 6 children, one hundred and forty-nine dollars ($149.00) per month.

Lieutenant—
Wife only, one hundred and thirty dollars ($130.00) per month.
Wife and 1 child, one hundred and thirty dollars ($130.00) per month.
Wife and 2 children, one hundred and thirty dollars ($130.00) per month.
Wife and 3 children, one hundred and thirty-five dollars ($135.00) per month.
Wife and 4 children, one hundred and forty dollars ($140.00) per month.
Wife and 5 children, one hundred and forty-five dollars ($145.00) per month.
Wife and 6 children, one hundred and forty-nine dollars ($149.00) per month.

Captain—
Wife only, or wife and one or more children, one hundred and fifty-three dollars ($153.00) per month.

Major—Wife only, or wife and one or more children, one hundred and ninety-three dollars ($193.00) per month.

Lieutenant-Colonel—Wife only, or wife and one or more children, two hundred and forty dollars and fifty cents ($240.50) per month.

Colonel—Wife only, or wife and one or more children, two hundred and seventy-eight dollars ($278.00) per month.

Brigadier-General (Commanding Brigade)—Wife only, or wife and one or more children, four hundred and eighty-two dollars ($482.00) per month.

Major-General (Commanding Division)—Wife only, or wife and one or more children, seven hundred and twenty-two dollars ($722.00) per month.

SCHEDULE 4.—MARRIED MAN AT HOME.

Private—
Wife only, ninety-seven dollars ($97.00) per month.
Wife and 1 child, one hundred and eight dollars ($108.00) per month.
Wife and 2 children, one hundred and twenty dollars ($120.00) per month.
Wife and 3 children, one hundred and thirty dollars ($130.00) per month.
Wife and 4 children, one hundred and forty dollars ($140.00) per month.
Wife and 5 children, one hundred and fifty dollars ($150.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

Bombardier and 2nd Corporals—
Wife only, ninety-eight dollars and fifty cents ($98.50) per month.
Wife and 1 child, one hundred and eight dollars ($108.00) per month.
Wife and 2 children, one hundred and twenty dollars ($120.00) per month.
Wife and 3 children, one hundred and thirty dollars ($130.00) per month.
Wife and 4 children, one hundred and forty dollars ($140.00) per month.
Wife and 5 children, one hundred and fifty dollars ($150.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

Corporal—
Wife only, one hundred dollars ($100.00) per month.
Wife and 1 child, one hundred and nine dollars ($109.00) per month.
Wife and 2 children, one hundred and twenty dollars ($120.00) per month.
Wife and 3 children, one hundred and thirty dollars ($130.00) per month.
Wife and 4 children, one hundred and forty dollars ($140.00) per month.
Wife and 5 children, one hundred and fifty dollars ($150.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

Sergeant—
Wife only, one hundred and nine dollars ($109.00) per month.
Wife and 1 child, one hundred and eighteen dollars ($118.00) per month.
Wife and 2 children, one hundred and twenty-five dollars ($125.00) per month.
Wife and 3 children, one hundred and thirty dollars ($130.00) per month.
Wife and 4 children, one hundred and forty dollars ($140.00) per month.
Wife and 5 children, one hundred and fifty dollars ($150.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

Squadron, Battery or Company Q.M. Sergeant, Orderly Room Clerk, Pay Sergeant—
Wife only, one hundred and fifteen dollars ($115.00) per month.
Wife and 1 child, one hundred and twenty-four dollars ($124.00) per month.
Wife and 2 children, one hundred and thirty-one dollars ($131.00) per month.
Wife and 3 children, one hundred and thirty-six dollars ($136.00) per month.
Wife and 4 children, one hundred and forty-one dollars ($141.00) per month.
Wife and 5 children, one hundred and fifty dollars ($150.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

Squadron, Battery or Company Sergeant-Major, Colour-Sergeant, Staff Sergeant—
Wife only, one hundred and eighteen dollars ($118.00) per month.
Wife and 1 child, one hundred and twenty-seven dollars ($127.00) per month.
Wife and 2 children, one hundred and thirty-four dollars ($134.00) per month.
Wife and 3 children, one hundred and thirty-nine dollars ($139.00) per month.
Wife and 4 children, one hundred and forty-four dollars ($144.00) per month.
Wife and 5 children, one hundred and fifty dollars ($150.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

R. Q. M. Sergeant—
Wife only, one hundred and twenty-four dollars ($124.00) per month.
Wife and 1 child, one hundred and thirty-three dollars ($133.00) per month.
Wife and 2 children, one hundred and forty dollars ($140.00) per month.
Wife and 3 children, one hundred and forty-five dollars ($145.00) per month.
Wife and 4 children, one hundred and fifty dollars ($150.00) per month.
Wife and 5 children, one hundred and fifty-five dollars ($155.00) per month.
Wife and 6 children, one hundred and sixty dollars ($160.00) per month.

Sergeant-Major (without warrant)—
Wife only, one hundred and twenty-five dollars and fifty cents ($125.50) per month.
Wife and 1 child, one hundred and thirty-four dollars and fifty cents ($134.50) per month.
Wife and 2 children, one hundred and forty-one dollars and fifty cents ($141.50) per month.
Wife and 3 children, one hundred and forty-six dollars and fifty cents ($146.50) per month.
Wife and 4 children, one hundred and fifty-one dollars and fifty cents ($151.50) per month.
Wife and 5 children, one hundred and fifty-six dollars and fifty cents ($156.50) per month.
Wife and 6 children, one hundred and sixty dollars and fifty cents ($160.50) per month.

Sergeant-Major (Warrant Officer)—
Wife only, one hundred and thirty-eight dollars ($138.00) per month.
Wife and 1 child, one hundred and forty-seven dollars ($147.00) per month.
Wife and 2 children, one hundred and fifty-four dollars ($154.00) per month.
Wife and 3 children, one hundred and fifty-nine dollars ($159.00) per month.
Wife and 4 children, one hundred and sixty-four dollars ($164.00) per month.
Wife and 5 children, one hundred and sixty-nine dollars ($169.00) per month.
Wife and 6 children, one hundred and seventy-three dollars ($173.00) per month.

Lieutenant—Wife only, or wife and one or more children, one hundred and seventy-four dollars ($174.00) per month.

Captain—Wife only, or wife and one or more children, two hundred and four dollars ($204.00) per month.

Major—Wife only, or wife and one or more children, two hundred and forty-four dollars ($244.00) per month.

Lieutenant-Colonel—Wife only, or wife and one or more children, two hundred and ninety-one dollars and fifty cents ($291.50) per month.

Colonel—Wife only, or wife and one or more children, three hundred and twenty-nine dollars ($329.00) per month.

Brigadier-General (Commanding Brigade)—Wife only, or wife and one or more children, five hundred and thirty-three dollars ($533.00) per month.

Major-General (Commanding Division)—Wife only, or wife and one or more children, seven hundred and seventy-three dollars ($773.00) per month.

(*b*) Provided that the allowances set forth in this clause shall not apply to or in respect of former members of the Canadian forces who are residing in, and require medical treatment in any country outside of Canada with the Government of which the department has a reciprocal arrangement under which former members of the Canadian forces are to receive the same pay and allowances while undergoing medical treatment as former members of the forces of the said country.

Provided also that the allowances in respect of dependents or such lesser amounts as may be determined by the department, may be payable to, or in respect of other dependents of a former member of the forces than a wife or children if such dependents would be entitled to the same had the former member of the forces been reattested as a member of the forces.

Provided further that if the allowances set forth in this clause, owing to their being based on a thirty-day month, or for any other reason, are less than the allowances which would have been payable to any former member of the forces or to his dependents (had such former member of the forces been reattested as a member of the forces or had such former member of the forces remained under the jurisdiction of the Department of Militia and Defence or the Department of the Naval Service), at the rank held by him on retirement or discharge, the pay and allowances of rank to which such former member of the forces and his dependents would in such event have been entitled shall be payable in lieu of the allowances herein set forth.

(*c*) The allowances as per the schedules contained in this clause shall be payable in the following manner:—

Schedule 1.—The former member of the forces shall receive ten dollars ($10.00) per month for his own use and the balance shall be held by the department to his credit until the conclusion of treatment.

Schedule 2.—The former member of the forces who is an out-patient shall receive the whole amount due to him.

Schedule 3.—The former member of the forces shall receive ten dollars ($10.00) per month for his own use, there shall be held by the department to his credit three dollars ($3.00) per month until the conclusion of treatment, and the balance above thirteen dollars ($13.00) per month shall be paid direct to his dependents.

Schedule 4.—The former member of the forces shall receive thirteen dollars ($13.00) per month and the balance shall be paid direct to his dependents.

Provided that the department may in its discretion hold to the credit of a former member of the forces a larger or smaller proportion of the monthly allowance than is set forth herein, or may pay the whole or any part to the former member of the forces or to his dependents.

Allowances for men called in for medical examination and renewals orthopædic appliances.

17. (*a*) When a former member of the forces not in receipt of allowances under any of clauses (5), (6), (7), (8), (9), or (16), is directed by an officer of the department or by a medical practitioner acting under the authority of the department, to report at an institution for examination or observation, or is directed by an officer of the department to report to an institution or other place for repairs to or replacement of an artificial limb or other orthopaedic appliance, or is directed by a dental officer of the department, or by a dental practitioner acting under authority of the department, to report at an institution or other place for dental treatment, or is directed by a vocational officer of the department to report at a specified place for the purpose of an interview, such former member of the forces shall be entitled to receive the following allowances, provided that the time occupied shall not be longer than fourteen (14) days:—

Return transportation, first-class, with sleeping berth if necessary.

Five dollars ($5.00) per day of 24 hours for actual time occupied in travelling by the most direct route to and from, and for actual time detained in the town where hospital, institution or place to which the former member of the forces is directed to report is situated, made up as follows:—

7 P.M. to 1 A.M.	$1.00
1 A.M. to 7 A.M.	1.00
7 A.M. to 1 P.M.	1.50
1 P.M. to 7 P.M.	1.50

Provided (*a*) that if sleeping berth has been provided, or if the institution or other place to which such former member of the forces is directed to report is in the same town as or is contiguous to his place of residence, he shall not be paid the allowances payable for the period between 7 p.m. and 7 a.m., and (*b*) that if he is furnished with subsistence (bed and maintenance) at a hospital or other institution he shall be paid at the rate of $2.00 per day only reckoning from 7 a.m. to 7 p.m.

(*b*) When it is necessary for a former member of the forces not in receipt of allowances under any of clauses (5), (6), (7), (8), (9), or (16), to remain at an institution for observation or for repairs to his artificial limb or other orthopædic appliance or should the repairs to his artificial limb or other orthopædic appliance take such time as to keep him from his home or prevent him from following any remunerative occupation for longer than fourteen (14) days, he shall, after the fourteenth day be paid the amount of allowances set forth in clause (16) hereof, less the amount of pension, if any, paid to or in respect of himself or his dependents.

(*c*) When a former member of the forces who is undergoing treatment or training and is in receipt of allowances for such is directed by an officer of the department to report at an institution or other place for examination, or for treatment, or for repairs to or replacements of an artificial limb or other orthopædic appliance, or for an interview, his allowances, subject to clause (21) shall continue and he shall be entitled to receive:—

1. Transportation, first-class, with sleeping berth if necessary, between the points of movement.

2. Meals in transit, if necessary, $1.00 each.

3. Payment of any reasonable expenses, which he may incur provided that such expenses are authorized and approved by an officer of the department prior to their being incurred.

(*d*) When a former member of the forces who has undergone treatment or training and has been in receipt of allowances for such is directed by an officer of the department upon completion of treatment or training to return to his home or customary place of residence, he shall be entitled to receive:—

1. Transportation, first-class, with sleeping berth, if necessary, to the point from which he reported for treatment or training.

2. Meals in transit, if necessary at $1.00 each.

3. Payment of such other reasonable expenses which he may incur, provided such expenses are authorized and approved by an officer of the department prior to their being incurred.

Treatment—out-patients, Class 2.

18. When a former member of the forces not in receipt of allowances under any of clauses (6), (7), (8), or (16) whose disability does not prevent him from obtaining or continuing employment, requires out-patient treatment, he shall be entitled to receive such treatment from the department and to receive such medicine as he may need. He shall not be entitled to the allowances set forth in clause 16 hereof, but if attendance for such treatment or medicine causes such former member of the forces a monetary loss he shall be entitled in the discretion of the department to be reimbursed for such loss provided that the amount shall not exceed one dollar ($1.00) for each attendance for treatment together with reasonable travelling expense.

Training—stoppage and continuation of pension.

19. When a former member of the forces commences training by the department, no further payment or payments of pension and allowances by the Board of Pension Commissioners or the Pension and Claims Board other than the payment or payments of such pension and allowances to the date of the commencement of training, shall be made to such former member of the forces, and the allowances payable under the authority of this Order in Council shall commence from the date of such commencement of training provided that if a payment or payments of pension is or are received by a man during his period of training the department shall have authority to deduct the amount of such payment under the authority of this Order in Council, and provided also that at the conclusion of his training by the department, the Board of Pension Commissioners shall continue pension allowance or gratuity if any, at such rate as they may then determine as from the day following the day on which the training of such former member of the forces was concluded.

Treatment—Pension to continue.

20. When a former member of the forces is accepted for treatment by the department, and is entitled to the allowances set forth in clause (16) hereof, there shall be deducted from each payment of such allowances the amount of pension, if any, to which he or his dependents may be entitled from the Board of Pension Commissioners or the Pension and Claims Board for the period for which he is undergoing treatment, such deduction being made from the amounts payable to the man himself or his dependents, or both in the discretion of the department.

Treatment and training—Institutional treatment for men undergoing training.

21. If a former member of the forces who is undergoing training by the department requires institutional treatment during the period of his training, his training allowances and the allowances of his dependent or dependents may be continued during the period of such institutional treatment, subject to deduction as set forth in clause (13) provided that the payment of such allowances by the department during the period of such treatment shall be suspended if the treatment is made necessary by misconduct, provided also that at any time the former member of the forces may be transferred from training allowances to treatment allowances at the discretion of the department.

Treatment—men refusing to undergo treatment, misconduct.

22. If a naval or military medical board or a medical officer of the department reports that a former member of the forces shall undergo treatment and such former member of the forces unreasonably refuses to undergo such treatment or if by any reason of the misconduct of such former member of the forces while undergoing treatment it is necessary in the dis-

cretion of the department to discontinue such treatment, the pension to which he or his dependents would otherwise be entitled may, in the discretion of the Board of Pension Commissioners for Canada, be reduced or refused and any post discharge pay or war service gratuity to which former member of the forces and his dependents at the time such report is received, or such treatment is discontinued by the department may be entitled, may be withheld until the department has certified to the officer i/c of post discharge pay that such former member of the forces has undergone and completed to the satisfaction of the department the treatment so recommended or that such misconduct has been excused. The decision as to what under the provisions of this clause constitutes unreasonable refusal or misconduct shall rest with the department and its decision shall be final.

Treatment and training—Post-treatment and training allowances.

23. (1) The payment of allowances authorized by this Order in Council may be continued for one month after the completion of training of a former member of the forces, provided that (*a*) in the opinion of the department his conduct while undergoing training has been satisfactory, (*b*) his training has occupied a longer period than two months, (*c*) in the opinion of the department such continuation of payment is necessary to assist him in obtaining employment or to tide him over a period of temporary difficulty.

(2) The payment of allowances authorized by this Order in Council may be continued for one month after the completion of treatment of a former member of the forces, provided that (*a*) in the opinion of the department his conduct, while undergoing treatment, has been satisfactory, (*b*) his treatment has occupied a longer period than two months, (*c*) he is not entitled to any payment of war service gratuity, (*d*) in the opinion of the department such continuation of payment is necessary to assist him in obtaining employment or to tide him over a period of temporary difficulty.

Department's requirements to be observed in Discharges.

24. In carrying out the retirement or discharge of any person who has served in the Canadian naval or military forces of His Majesty during the present war the requirements of the Department of Soldiers' Civil Re-establishment shall so far as possible be complied with.

Treatment and training—Department's disciplinary powers and regulations.

25. The department shall have power to make regulations respecting the administration and discipline of, and allowances payable for, a former member of the forces while undergoing treatment or training by the department and the allowances payable for his dependent or dependents and all deductions from or cancellations of such allowances for the purpose of discipline, and to require that before becoming entitled to treatment or training by the department a former member of the forces shall sign a document agreeing while undergoing treatment or training to submit to all such regulations.

Treatment and training—age limit child dependents.

26. No allowances shall be paid under authority of this Order in Council for any child or brother or sister of any former member of the forces who, if a boy is over the age of 16, or, if a girl is over the age of 17 years, provided, that if the child or brother or sister is unable owing to physical or mental infirmity to provide for its maintenance the allowances may be continued until such child or brother or sister has attained

the age of 21 years. Provided also that no allowances shall be paid in respect of a child or brother or sister after the marriage of such child or brother or sister.

Cancellation of previous Orders in Council.

27. The provisions of the Order in Council P.C. 1366 dated the 22nd June, 1918, are hereby rescinded as from the first day of March, 1919, but the allowances which at the date of this Order in Council are being paid under the provisions of P.C. 976, dated the 12th April, 1917, to a former member of the forces undergoing training and to his dependent or dependents may in the discretion of the department continue to be paid until his training has been completed.

Treatment and training—Departmental decision final.

28. The decision of a naval or military medical board or of a medical officer of the department under the provisions of clause (1) and the decision of the department under the provisions of clauses (1), (6). (10). (11), (12), (13), (14), (16), (18), (20), (21), (22), (23), (27), (29) and (30), and the decision of the Board of Pension Commissioners for Canada under the provisions of clause (22) shall be final.

Insane former members of the forces.

29. The provisions of this Order in Council shall not apply to any former member of the forces who is certified by a naval or military medical board or a medical officer of the department to be insane, provided that an out-patient of a hospital for the insane may in the discretion of the department be paid the allowances set forth in clause 16 hereof.

Treatment and training—to whom Order in Council does not apply.

30. The provisions of this Order in Council and of the Order in Council of the 21st February, 1918 (P.C. 432) shall not, unless the department otherwise directs, extend and apply to any person who has served in the naval and military forces of His Majesty during the present war who—

(*a*) has been cashiered or dismissed the service by sentence of court-martial;

(*b*) has been deprived of his commission or warrant by reason of misconduct;

(*c*) has been called upon to retire or to resign his commission or warrant by reasons of misconduct;

(*d*) has been discharged, having been sentenced to be discharged with ignominy, or in the naval forces with or without disgrace;

(*e*) has been discharged, having been sentenced to penal servitude or having been sentenced by court-martial to imprisonment for two years or more;

(*f*) has been discharged during his service, having been convicted by the civil power of an offence punishable by imprisonment for more than two years committed either before or after enlistment; or

(*g*) has been discharged for misconduct, or to any person who has served in the naval or military forces of any of His Majesty's Allies during the present war, who has been retired or discharged on any like ground.

31. The provisions of this Order in Council shall be operative from the 1st day of September, 1920. and the allowances hereby authorized for men undergoing training shall include expenses of transportation, to and from places of training, and meals, except as provided in clauses (13) and (17) hereof; and the allowances hereby authorized for men undergoing treatment shall be increased by seven dollars ($7.00) per month in accordance with Order in Council P.C. 1549 dated the 22nd June, 1920.

APPENDIX II

Order in Council (P.C. 1993) dated the 28th September, 1918, re-enacted by Order in Council (P.C. 2324) dated the 21st November, 1919, and amended by Order in Council (P.C. 2139) dated the 15th September, 1920.

Authority under which the Department of Soldiers' Civil Re-establishment may deal with insane former members of the forces.

Whereas by Bill 12, introduced in the 1st Session, 13th Parliament, 8-9 George V, 1918, intituled "An Act respecting the Department of Soldiers' Civil Re-establishment."

> "the management and control of all matters relating to the re-establishment in civil life and activities of all persons who have served in the naval or military forces of His Majesty or any of His Majesty's Allies during the present war and the dependents of such persons, and the administration of any statutes or of any regulations or orders enacted or made by the Governor in Council for such purpose."

was conferred upon the Minister of Soldiers' Civil Re-establishment;

And whereas under Order in Council of the 21st February, 1918 (P.C. 433) the Invalided Soldiers' Commission, then known as the Military Hospitals Commission, now a branch of the Department of Soldiers' Civil Re-establishment, was charged with the care and treatment of former members of the Canadian Expeditionary Force suffering from insanity or who are mentally deficient;

And whereas by Order in Council P.C. 3433, dated the 22nd December, 1917, regulations were made regarding the treatment and care of members of the Canadian Expeditionary Force who had become insane during, or as a result of, military service;

And whereas by P.C. 462, dated 2nd March, 1918, regulations were made regarding the treatment and care of insane officers and men of the Naval Service who had become insane during, or as a result of, their service with the Department of Naval Service;

And whereas owing to the reorganization of the Invalided Soldiers' Commission under the Department of Soldiers' Civil Re-establishment, and the regulations now in force that members of the Canadian Expeditionary Force who are found to be mentally deficient or insane should be retired or discharged from such force as soon as practicable after their return from overseas or after their condition has been diagnosed;

Therefore His Excellency the Governor General in Council, on the recommendation of the Minister of Soldiers' Civil Re-establishment, is pleased to order as follows:—

The Orders in Council P.C. 3433, dated the 22nd day of December, 1917, and P.C. 462, dated the 2nd day of March, 1918, are hereby rescinded and the following substituted therefor:—

1. Whenever the term "former member of the forces" is used herein it shall apply to all persons who have served in the Canadian naval or military forces of His Majesty during the present war and who have been retired or discharged therefrom, and who may now or hereafter be resident in Canada, and whenever the term "dependents" is used it shall apply only to such persons as are classed as dependents under the authority granted to the Board of Pension Commissioners for Canada.

2. Insane members of the Canadian naval and military forces shall be retired or discharged from the naval or military forces as soon as possible after their return from overseas or after their condition has been diagnosed and shall, subject to arrangements with the Department of Soldiers' Civil Re-establishment and at its option, be sent to an institution operated by that department or to a provincial hospital for the insane in the province in which they were domiciled before enlistment, the Department of Soldiers' Civil Re-establishment being immediately notified as to disposition made of such former members of the forces.

3. The Department of Soldiers' Civil Re-establishment shall have authority to operate such hospitals for the insane as may be deemed necessary and may make such arrangements with the Provincial Governments for the care and treatment of insane former members of the forces in provincial hospitals for the insane as may be necessary.

4. "Former members of the forces who are insane may be divided into three classes as follows:—

A. Retired or discharged owing to insanity entirely caused by service.

B. Retired or discharged owing to insanity only partially caused by service, and

C. Retired or discharged owing to insanity not in any way caused by service.

Each of these classes my be subdivided as follows:—

(1) With dependents.

(2) Without dependents.

Classes A and B.—Former members of the forces retired or discharged owing to insanity entirely caused by service, or partially caused by service.

(1) With dependents: (*a*) The former member of the forces shall be maintained by the Department of Soldiers' Civil Re-establishment. (*b*) His dependents shall be paid by the Department of Soldiers' Civil Re-establishment a sum equal to the amount of pension which would be payable to them if he had died on active service. (*c*) Should he be certified to have recovered from his insanity the amounts which would have been paid to him and his dependents had he been receiving treatment for a disability other than mental shall be computed and there shall be deducted therefrom the amounts which have been paid to or in respect of his dependents and the amounts which have been paid for or in respect of clothing and comforts and other expenses for the man himself, other than maintenance, and the balance shall be paid to him in one sum or spread over a period at the discretion of the Department of Soldiers' Civil Re-establishment, provided that no amounts other than those set forth in subsection (*b*) of this paragraph, shall be payable to his dependents or his estate, should he die while undergoing treatment.

(2) Without dependents: (*a*) The former member of the forces shall be maintained by the Department of Soldiers' Civil Re-establishment. (*b*) Should he be certified to have recovered from his insanity, the amounts which would have been paid to him had he been receiving treatment for a disability other than mental, shall be computed and there shall be deducted therefrom the amounts which have been paid for or in respect of clothing and comforts and other expenses, other than maintenance, and the balance shall be paid to him in one sum, or spread over a period at the discretion of the Department of Soldiers' Civil Re-establishment provided that no amounts shall be payable to his estate, should he die while undergoing treatment.

Class C.—Former members of the forces retired or discharged owing to insanity not in any way caused by service.

The former member of the forces shall be maintained by the Department of Soldiers' Civil Re-establishment. No allowances shall be paid to his dependents, if any, and no amount shall be paid to him, should he recover.

5. If a legal guardian or curator has been appointed to administer the affairs of an insane former member of the forces and the Department of Soldiers' Civil Re-establishment has been relieved of responsibility for his care and maintenance, he shall be awarded a pension by the Board of Pension Commissioners for Canada commencing on the day following the day on which the Department of Soldiers' Civil Re-establishment has ceased to maintain and care for him and the whole of such pension shall be paid by the Board of Pension Commissioners to such guardian or curator provided that in the discretion of the Board of Pension Commissioners the whole of such pension may be paid to a person who has not been appointed legal guardian or curator, but who has been appointed administrator.

6. (*a*) When a former member of the forces who has been undergoing treatment in a hospital for the insane under the Department of Soldiers' Civil Re-establishment has recovered sufficiently to be allowed to pass under his own control the local representative of that department shall forward to the Board of Pension Commissioners the proceedings of the Board of Medical Officers certifying to such recovery and the Board of Pension Commissioners shall then award pension, allowance or gratuity, if any, to commence on the day following the day of the release by the Department of Soldiers' Covil Re-establishment of such former member of the forces. (*b*) The amount, if any, standing to his credit on the books of the Department of Soldiers' Civil Re-establishment shall be paid to him.

7. (*a*) The pension granted to a former member of the forces at present undergoing treatment in a hospital for the insane shall at a date to be set by the Department of Soldiers' Civil Re-establishment be cancelled and the provisions of this Order in Council shall then apply to such former member of the forces and to his dependents, if any, (*b*) Any amount standing to the credit of such former member of the forces on the books of the Board of Pension Commissioners shall be transferred to his credit on the books at the head office of the Department of Soldiers' Civil Re-establishment.

8. The Department of Soldiers' Civil Re-establishment may from time to time, and in its discretion, make arrangements with the Governments of any of His Majesty's dominions for the maintenance of insane persons who have served in the naval and military forces of His Majesty other than those of the Canadian forces during the present war and who have been retired or discharged therefrom and who may now or hereafter be resident in Canada, whether *bona fide* residents in Canada at the outbreak of the present war or not, and may render accounts for such maintenance.

9. The Department of Soldiers' Civil Re-establishment, with the approval of the Governor in Council, may from time to time, and in its discretion, make arrangements with the Governments of His Majesty's Allies for the maintenance of insane persons who have served in the naval or military forces of His Majesty's Allies and who have been retired or discharged therefrom and who may now or hereafter be resident in Canada, whether *bona fide* residents in Canada at the outbreak of the present war or not, and may render accounts for the cost of such maintenance.

10. The provisions of Order in Council P.C. 1366, dated the 22nd day of June, 1918, regarding pay and allowances of men undergoing treatment in hospitals under the Department of Soldiers' Civil Re-establishment shall not apply to former members of the forces who are undergoing treatment for insanity.

11. The Department of Soldiers' Civil Re-establishment may arrange with the superintendents of hospitals for the insane for an allowance to be made to former

members of the forces interned in such hospitals for the insane for the purpose of purchasing clothing, tobacco or other comforts and the amount of such allowance shall be charged against the former member of the forces on the books of the Department of Soldiers' Civil Re-establishment and shall be deducted from any amounts payable to him should he recover, but in the event of his non-recovery it shall be written off.

RODOLPHE BOUDREAU,
Clerk of the Privy Council.

APPENDIX III

Order in Council P. C. 1549, dated the 8th July, 1920

Authority under which the Department of Soldiers' Civil Re-establishment may pay to former members of the Forces $7.00 per month in lieu of the free issue of clothing

The Committee of the Privy Council have had before them a report, dated 6th July, 1920, from the Minister of Soldiers' Civil Re-establishment, submitting that, on the recommendation of the Parliamentary Committee on Re-establishment held in 1919, an Order in Council was passed on the 21st November, 1919 (P.C. 2325), under which the Department of Soldiers' Civil Re-establishment was authorized to make free issues of clothing to ex-members of the forces undergoing treatment by the department, as in its discretion were deemed necessary.

The minister states that representations were made to the Parliamentary Committee on Pensions and Re-establishment which has recently reported to Parliament, that the payment of a monthly sum in lieu of the issue of clothing, would be more acceptable to the patients under the care of the department, and the following recommendation was inserted in the report of the committee:—

> "That the free issue of clothing to patients on the strength of the Department of Soldiers' Civil Re-establishment for medical treatment provided for under Order in Council P.C. 2325, 1919, be discontinued, and that in lieu thereof each patient be granted as from the first of September next a cash allowance at the rate of $7.00 per month."

The minister, therefore, recommends that the Department of Soldiers' Civil Re-establishment be authorized to carry out the foregoing recommendation as from the 1st July, 1920.

The committee advise that the requisite authority be granted accordingly.

(Sgd.) RODOLPHE BOUDREAU
Clerk of the Privy Council.

APPENDIX IV

Order in Council, P. C. 112, dated the 26th January, 1920

Authority under which the Department of Soldiers' Civil Re-establishment may place men in industries for training under an agreement with employers as to wages on an ascending scale.

The Committee of the Privy Council have had before them a report, dated 10th January, 1920, from the Minister of Soldiers' Civil Re-establishment, submitting that under the chairmanship of the Honourable J. A. Calder, P.C., M.P., the Special Parliamentary Committee on Bill 10, an Act to amend the Department of Soldiers' Civil Re-establishment Act, in its report to the House of Commons, which was adopted by that House, stated that the following suggestion had been made to the committee:—

> "That the department in making provision for the retraining of disabled men should endeavour as far as may be found practicable to place men in industries under an agreement with employers as to wages on an ascending scale, the department to pay the difference between the wages received and the pay and allowances now granted, the object being to lengthen the period of training without additional cost to the department."

That the following recommendation was made by the committee:—

> "That the suggestion be carried out to as full an extent as possible without, however, attempting to relieve the department of any expense it would ordinarily incur in the retraining of any disabled soldier."

The minister states that applications have been made for extensions of courses in the manner indicated above, but the powers at present conferred on the Department of Soldiers' Civil Re-establishment do not empower the department to carry out the recommendation.

The minister, therefore, recommends that, in pursuance of the foregoing recommendation, the Department of Soldiers' Civil Re-establishment be authorized to enter into arrangements with employers, in accordance with the foregoing suggestion, and, when in the discretion of the department it is considered desirable in the interests of the trainee so to do, to pay to a trainee who has been placed in an industry the difference between the wages or other remuneration received by him in such industry and the amount of the pay and allowances for men undergoing training authorized by Order in Council P.C. 387, dated the 24th February, 1919, provided that the total sum paid by the department to a trainee under the authority herein contained including any amounts he and his dependents may previously have received as training allowances under the said Order in Council shall not exceed a total of eight times the monthly allowance which would be payable to him under the authority of the said Order in Council were he undergoing training in one of the department's schools, or otherwise; provided also that when a trainee receives, from the firm or company under whom he is being trained in accordance with these provisions a monthly wage or other remuneration equal to the monthly amount of pay and allowances provided for men undergoing training by the said Order in Council, his course shall be considered as completed and all payments by the department shall cease.

The Committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

APPENDIX V

Order in Council, P.C. 2554, dated the 24th December, 1919, and Order in Council P.C. 728 dated the 21st April, 1920.

Authority under which the Department of Soldiers' Civil Re-establishment may compensate men sustaining injury while being trained.

P.C. 2554

Whereas the Minister of Soldiers' Civil Re-establishment reports as follows:—

The Department of Soldiers' Civil Re-establishment, in carrying out the duties delegated to it by Parliament, is at the present time giving retraining courses to over 22,000 men. Where it is deemed advisable so to do, in the interests of the trainee, the course is given in an industrial establishment. In this way training can be given in a wide range of occupations at a cost very much less than would be involved if the department established industrial training centres and employed teachers therein for the purpose. Further, if the cost were no object the work of teaching trades is usually better done in actual commercial workshops than in technical schools or in such industrial training centres as might be organized by the department.

From time to time accidents may occur in industries in which men are receiving training and injury may be received during the course of their training by such men through other causes than negligence and carelessness on the part of the trainee, and it is submitted that the department should compensate such men for any such injury received at corresponding rates to those which would be allowed by the various local Compensation Boards.

Where a trainee is injured during the course of his training, all medical attention and treatment will be provided by the department, and a careful investigation into the nature and cause of the accident made, so as to decide as far as possible whether or not such accident occurred during the natural course of the man's duties or whether it was due to carelessness or neglect on his part.

A man undergoing training by the department is in receipt of pay and allowances and is entirely under the control of the department as to the work which he does. It is, therefore, considered that he should be regarded as in the employ and service of His Majesty, so as to bring him under the provisions of the Act to provide compensation where employees of His Majesty suffer injury while performing their duty" (Statutes of Canada, 1918, Chapter 15.)

Therefore His Excellency the Governor General in Council, is pleased to order and it is hereby ordered as follows:—

Men undergoing training by the Department of Soldiers' Civil Re-establishment shall, for the purposes of Workmen's Compensation, be considered employees of the Department of Soldiers' Civil Re-establishment while in receipt of pay and allowances from the department, and the provisions of subsections 1 and 2 of section 1 of the "Act to provide compensation where employees of His Majesty are killed or suffer injury while performing their duty" (Statutes of Canada, 1918, Chapter 15), shall apply to such men: further the Department of Soldiers' Civil Re-establishment is hereby authorized to carry out such investigations as may be necessary to safeguard the interests of the Government in this regard, and to pay such compensation as may be awarded.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

P.C. 728.

Whereas the Minister of Soldiers' Civil Re-establishment reports as follows:—

The Order in Council of the 24th December, 1919 (P.C. 2554), which provides that ex-members of the forces undergoing training by the department shall, for the purposes of compensation for injuries received during the course of training, be considered employees of the Department of Soldiers' Civil Re-establishment, and that the provisions of subsections 1 and 2, section 1, chapter 15, Statutes of Canada, 1918, shall apply to such men, would appear to be limited, in its application by the following statement contained therein:—

> "From time to time accidents may occur in industries in which men are receiving training and injury may be received during the course of their training by such men through other causes than negligence and carelessness on the part of the trainee."

In certain of the provinces of Canada, compensation is awarded under provincial legislation to workmen who sustain injuries irrespective of whether such injuries were caused through negligence or carelessness on the part of the workmen, and it is submitted that ex-members of the forces on the strength of the Department of Soldiers' Civil Re-establishment for training, should be entitled to the same compensation in case of injury as other workmen in the province in which such ex-members of the forces are being trained.

Therefore His Excellency the Administrator in Council, on the recommendation of the Minister of Soldiers' Civil Re-establishment, is pleased to order and it is hereby ordered as follows:—

Notwithstanding anything to the contrary which may be contained in the said Order in Council of the 24th December, 1919 (P.C. 2554), ex-members of the forces undergoing training by the Department of Soldiers' Civil Re-establishment shall, while in receipt of pay and allowances from the department, be considered employees thereof, and in case of injury shall be entitled to the full benefits of compensation provided by the said subsections 1 and 2, section 1, chapter 15 of the Statutes of Canada, 1918, subject only to the condition that the Department of Soldiers' Civil Re-establishment shall be authorized to carry out such investigations as may be necessary to safeguard the interests of the Government of Canada in this regard, and to pay such compensation as may be awarded.

(Sgd.) G. G. KEZAR.
Assistant Clerk of the Privy Council.

APPENDIX VI

Order in Council P.C. 551, dated the 17th March, 1920.

Respecting reciprocal arrangements with Belgium for treatment of former members of the Belgian Forces in Canada and the Canadian Forces in Belgium.

The Committee of the Privy Council have had before them a report, dated 8th March, 1920, from the Minister of Soldiers' Civil Re-establishment, stating that in pursuance of the authority granted by Order in Council of the 24th February, 1919 (P.C. 387), certain proposals for the reciprocal treatment of former members of the Canadian and Belgian forces resident in the country of the other were submitted to the Consul General for Belgium by the Department of Soldiers' Civil Re-establishment, and that in reply the Consul General has advised that his Government approves of the arrangements proposed by the Department, and desires that the same be put into effect.

The Minister, therefore, recommends that the Department of Soldiers' Civil Re-establishment be authorized to provide medical and surgical treatment for former members of the Belgian forces resident in Canada who require the same for disabilities caused or aggravated by service with the Belgian forces during the War of 1914-18, provided, however, that the cost of such treatment (which shall not include any charges for executive overhead expenses of the Department of Soldiers' Civil Re-establishment), shall be a charge against the Government of Belgium, and upon the understanding that the Government of Belgium will provide similar facilities at the expense of the Department of Soldiers' Civil Re-establishment for the treatment of former members of the Canadian Forces Resident in Belgium.

The Committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) G. G. KEZAR.
Assistant Clerk of the Privy Council.

APPENDIX VII

Order in Council P.C. 2311, dated the 25th September, 1920

Authority under which the Department of Soldiers' Civil Re-establishment may manufacture and supply Prosthetic appliances to other Government Departments and to Workmen's Compensation Boards

The Committee of the Privy Council have had before them a report, dated 20th September, 1920, from the Acting Minister of Soldiers' Civil Re-establishment, submitting that the Department of Soldiers' Civil Re-establishment is now operating a fully equipped factory for the manufacture of artificial limbs and general prosthetic appliances for the benefit of ex-members of the naval and military forces of Canada and of the Allied and Associated Powers.

The minister states that from time to time requests have been made to the department that these appliances should be manufactured for and supplied to, others than ex-members of the forces. These requests, with one exception have not been entertained, the exception being in the case of victims of the Halifax explosion.

It will be necessary for the Government to maintain for many years to come, a factory for the manufacture of prosthetic appliances and as the cost of production is, to a certain extent determined by the output, a larger field of supply would necessarily result in lower individual cost.

At the last session of the Ontario Legislature an amendment was passed to the Workmen's Compensation Act providing that injured workmen were to be entitled to artificial members and apparatus which might be necessary as a result of their injuries. It is possible that legislation of a similar character will be enacted in the other provinces.

The Workmen's Compensation Board of Ontario inquired if some arrangement could not be made by the Board under which it would be able to procure prosthetic appliances for injured workmen from the Department of Soldiers' Civil Re-establishment. It it pointed out that the Board could obtain these from various firms engaged in the business but it would not be possible in this way to obtain the advantage of standard appliances with interchangeable parts, capable of repair and renewal, in various parts of Canada. It is anticipated that the annual number of arms and legs would be about forty (40).

It is necessary from time to time to supply prosthetic appliances at the expense of the Government to employees of the Government engaged on the Canadian National Railways and in other departments. In view of the increased activities of the Government in this direction it is probable that the demand in the future will be greater than heretofore.

The minister, therefore, recommends that the Department of Soldiers' Civil Re-establishment be authorized to manufacture and supply artificial arms, legs and other prosthetic appliances to any other Department of the Government of Canada, to the Workmen's Compensation Board for Ontario and to similar boards in other provinces as requested so to do, at prices to be determined from time to time by the department, so long as facilities exist for manufacturing and supplying such appliances to ex-members of the forces.

The committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

APPENDIX VIII

Order in Council P.C. 2936, dated the 3rd December, 1920

Authority under which the District Organization of the Board of Pension Commissioners for Canada has been absorbed by the Unit Organization of the Department of Soldiers' Civil Re-establishment

The Committee of the Privy Council have had before them a report, dated 30th November, 1920, from the Acting Minister of Soldiers' Civil Re-establishment, submitting that for some time past he has had under consideration the question of the amalgamation of certain activities of the Department of Soldiers' Civil Re-establishment and the Board of Pension Commissioners for Canada.

The minister states that by his direction, officers of the department and of the board have conferred together in order to ascertain what economy could be effected without interference with the work of the department or of the board.

The department has branch offices in the principal cities of Canada and will require to maintain these for a considerable time to come. The board also has branch offices in most of the same centres. The work carried out in the branch offices is partly medical and partly administrative in addition to the specific activities of the department in connection with vocational training, et cetera.

Owing to the number of men coming forward for treatment for disabilities due to or aggravated by service it is necessary for the department to maintain a considerable staff of medical officers as well as attendant clerical help. The staff carried by the Board of Pension Commissioners in its unit administration, numbers two hundred and seventy (270) made up of medical advisers, administrative and clerical staff.

The officers of the department and of the board consider that an amalgamation in the branch offices is workable and would result in a saving in administration cost due to a possible reduction in the number employed by both organizations, and due to the compilation of files and records which would necessarily follow.

At the present time, in all districts except four, namely, Ottawa, Toronto, Vancouver and Calgary, the offices of the Board of Pension Commissioners are in the same building and in many instances adjacent to the offices of the Department of Soldiers' Civil Re-establishment so that it is felt that the change suggested could be brought about very expeditiously. The carrying out of this proposal would further eliminate a certain amount of overlapping and duplication of work.

The proposal is not designed to change the present method of administration. The unit heads of the Department of Soldiers' Civil Re-establishment consisting of the Assistant Director and the Unit Medical Director would deal direct with the Board of Pension Commissioners in Ottawa, on all matters affecting pension and instructions would be issued to them by the proper officials of the Board of Pension Commissioners.

The minister, therefore, recommends that the district or unit organization of the Board of Pension Commissioners for Canada be absorbed by the unit organization of the Department of Soldiers' Civil Re-establishment and that he be authorized to take the necessary steps to carry out this amalgamation at as early a date as possible.

The committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

APPENDIX IX

Order in Council P.C. 3017, dated the 13th December, 1920

Authority under which the Department of Soldiers' Civil Re-establishment may transfer surplus equipment and stores to other Departments of the Government without repayment

The Committee of the Privy Council have had before them a report, dated 6th September, 1920, from the Acting Minister, Soldiers' Civil Re-establishment, stating that the Department of Soldiers' Civil Re-establishment has a considerable quantity of hospital, office and vocational training equipment which is now, or will shortly become, surplus to requirements.

Various departments of the Government have requested that portions of this equipment be transferred for use of such departments, in order to obviate the purchase of new equipment.

The cost has been borne by the Department of Soldiers' Civil Re-Establishemnt or the Military Hospitals Commission, and is shown in the total expenditure made in respect of the care and treatment of returned soldiers and the general administration of the same. There is a ready market for this equipment, and, if it were sold, the proceeds would show a reduction amounting to a large sum in the capital expenditure of the department. If the equipment is transferred to other departments, the latter will benefit, while an expenditure which should have been reduced will stand against the Department of Soldiers' Civil Re-establishment.

On the other hand, it is recognized that the whole belongs to the Government of Canada, and that transfer as suggested would mean a saving to the Government.

The matter has been referred to the Auditor General who states that a decision of this question does not devolve upon him, but is a matter for governmental policy, there being no precedent upon which he can give advice. He points out, however, that in Great Britain the practice appears to be not to pay for inter-departmental transfers of stores.

In a recent work, "Parliamentary Grants," the author, Colonel Durel, C.B., Chief Paymaster of the War Office, says (page 364):—

> "The rule laid down by the Treasury is to the effect that one department should not pay another department for service rendered to it, and also that one department should not repay to another department the cost of stores, etc., supplied, when such payment or repayment involves duplicate charges on exchequer grants, and payment to the exchequer by one department of the amount received from the other. The same principle is applicable in the case of transfers of property by one department, which has no use for it, to any other department, which requires such property for public purposes. Transfers of this nature should be carried out without any inter-departmental payment. Each department must be regarded as subordinate to the exchequer, not as independent of every other department. Each is an individual but not an isolated square in the scheme of national finance. A system of repayment for services rendered would tend to create confusion in the national accounts; for money would have to be voted twice over, and the whole gross national expenditure would thus be fictitiously augmented."

In view of the saving to the Government which will be effected if stores and equipment are transferred by the Department of Soldiers' Civil Re-establishment to other departments when required by such other departments, the minister recommends that the Department of Soldiers' Civil Re-establishment be authorized to make such transfer without repayment, subject to a careful account being kept of the same and a footnote or memorandum being attached to the accounts of the Department of Soldiers' Civil Re-establishment, to the effect that equipment, etc., of a certain value has been transferred to certain other departments, thus reducing, in effect, the expenditure as shown by the parliamentary vote governing purchase.

The committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

APPENDIX X

Order in Council P.C. 3260, dated the 6th January, 1921.

Authority under which the Department of Soldiers' Civil Re-establishment may grant medical and surgical treatment to unemployed former members of the forces until the 31st March, 1921.

The Committee of the Privy Council have had before them a report, dated 31st December, 1920, from the Acting Minister Soldiers' Civil Re-establishment, submitting that representations have been made by the Dominion Command of the Great War Veterans' Association that there are a number of former members of the forces who are out of employment and who are sadly in need of medical treatment and hospitalization. A proposal has been made that the Department of Soldiers' Civil Re-establishment should furnish such medical treatment and hospitalization during the present unemployment.

The minister states that owing to the recent closing of a number of hospitals and the consequent reduction in the available bed accommodation it would not be possible to provide in-patient treatment in departmental hospitals, nor would emergency hospitals meet the situation as the majority of the cases requiring in-patient treatment could not receive proper care in temporary institutions. Any present surplus of available beds at the disposal of the department will be occupied by patients of the department coming under existing regulations.

The department could undertake to provide medical and surgical care for unemployed former members of the forces who require medical attention, which could be given at departmental clinics or at home. This service would render necessary an increase in the medical staff, the provision of transportation for such staff and the supply of medicines and surgical dressings.

It is estimated that the expenditure involved to provide the treatment indicated, would amount to One Hundred Thousand Dollars ($100,000) covering the months of January, February and March.

While the provision of medical and surgical treatment to all classes of needy or indigent cases is wholly a municipal one, it has been pointed out that to place the medical organizattion of the department's clinics at the disposal of unemployed former members of the forces would be in itself a great boom.

The minister recommends, after a full consideration of the situation, that the Department of Soldiers' Civil Re-establishment be authorized, until the 31st March, 1921, to grant medical and surgical treatment to former members of the forces who are unemployed and who are in need of the same, at the clinics operated by the department, or in cases where attendance at a clinic is impossible, at the men's own homes, subject to the following conditions:—

(*a*) That this service be limited to former members of the forces who are certified by one of the bureaus of the Employment Service of Canada to be unemployed, such certification to be directed to the Unit Medical Director of the department.

(*b*) That the department shall not be required to provide in-patient treatment and shall not do so unless there is ample available accommodation, the use of which will not handicap the hospitalization of those for whom such accommodation is being held.

(*c*) That former members of the forces granted treatment as indicated shall not be entitled to receive any allowances unless the disability is due to service.

The committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) G. G. KEZAR,
Assistant Clerk of the Privy Council.

APPENDIX XI

Order in Council, P.C. 43, dated the 10th January, 1921

Authority under which the Department of Soldiers' Civil Re-establishment may grant relief to former members of the Forces who are pensioners or who have received Vocational training on account of disability, during the months of January, February and March, 1921.

The Committee of the Privy Council have had before them a report, dated 4th January, 1921, from the Acting Minister of Soldiers' Civil Re-establishment, submitting that representations have been made that there are a number of former members of the forces who have been pensioned for disabilities due to war service, or who have received vocational training from the Department of Soldiers' Civil Re-establishment, who are out of employment and who are in need of assistance to tide them over the immediate future.

The minister observes that while the unemployment problem in Canada as elsewhere is general and would appear to be a charge upon the municipalities and the Provincial Governments, it has been urged that responsibility for men who have been handicapped through war service, should be assumed by the Federal authorities.

It is suggested that any assistance which might be given should not be in the form of cash but in the provision of certain necessaries of life. Before any grant is considered, full investigation should be made into the necessities of the applicant and his dependents.

After a full consideration of the situation, and without admitting that the Federal Government is in any way responsible for the employment of former members of the Forces who have been returned to civil life, the minister recommends that the Department of Soldiers' Civil Re-establishment be authorized to grant assistance to former members of the forces who are out of employment or who are able only to secure inadequate employment for the maintenance of themselves and their dependents, during the months of January, February and March, 1921, subject to the following regulations and limitations:—

1. Those entitled to assistance shall be

(*a*) necessitous cases among former members of the Forces who have been pensioned for a disability due to or aggravated by service in the Great War or former members of the forces who have received vocational training under the Department of Soldiers' Civil Re-establishment for a war disability which prevented the trainee from following his pre-war occupation; and

(*b*) former members of His Majesty's Imperial forces, and former members of the forces of His Majesty's Allies who have been pensioned for a service disability due to or aggravated by service in the Great War and have been residents of Canada for three months prior to making application.

2. In order to determine what is a necessitous case, officers of the department shall investigate the home conditions of the applicant for assistance and shall take into consideration income from the earnings of the members of the family. When a pensioner or a former vocational student is unable to secure such employment as will yield sufficient remuneration to provide for himself and his dependents, or for whom such employment cannot be secured by reason of there being no employment available, as certified by an official of the Employment Bureau, assistance may be granted.

3. The assistance granted shall not be in cash, but shall be limited to expenditure by the department on behalf of the pensioner or former vocational student of such amounts as may enable him and his dependents to carry on for the period indicated.

4. The following shall be the maximum amounts per month which may be expended on behalf of any case:—

Man and wife	$ 75
First child under 16 (girl 17)	12
Second child under 16 (girl 17)	10
Single man without dependents (maximum allowance)	50
Single man with dependents, same as for married man; provided that no expenditure covering a period of more than one week in advance shall be incurred.	

5. There shall be deducted from any allowances authorized by the department, all income received by the family by way of earnings, investments or pension, so that the maximum allowances referred to in paragraph 4 shall be inclusive of all income.

6. All expenditure in respect of this authority shall be charged by the department against Parliamentary Vote number 280.

7. The department shall be authorized to make such regulations as may be necessary in respect of this authority.

The committee advise that the requisite authority be granted accordingly.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

APPENDIX XII

Federal Emergency Appropriation, 1919-20

In view of the fact that during the latter part of 1919, it was apparent that the problem of re-establishment had not fully been met, owing to the limited period since the return of the Canadian contingents from overseas and in view of the probable unemployment during the winter, Parliament decided on the recommendation of a special committee which had given full consideration to the matter, to make an appropriation of $50,000,000 for the following special purposes:—

1. To provide gratuities to Canadians who enlisted in the R.A.F. and other units, etc..	$ 9,000,000
2. To provide rebate of transportation expenses by dependents who returned to Canada prior to November 11, 1918.. ..	1,000,000
3. To provide the following expenditures:—	
(*a*) Free clothing to S.C.R. patients..	
(*b*) Pay and allowances to trainees taken on strength of S.C.R and subsequently not approved..	
(*c*) Care of neurological and sub-normal cases..	
(*d*) Necessitous cases — pensions — under arrangement with the Patriotic Fund..	10,000,000
(*e*) Cashing cheques at par for Canadians who joined Imperial Units..	
(*f*) Loans to retrained disabled men for tools and equipment..	
(*g*) Loans to disabled men for training and education..	
(*h*) To take care of unemployment during coming winter.	
Total..	$50,000,000

2. The expenditure in connection with the foregoing recommendations was divided among several departments. The Department of Militia and Defence had charge of gratuities to Canadians who enlisted in the R.A.F. and other units. The Department of Soldiers' Civil Re-establishment had charge of (*a*), (*b*), (*c*), (*f*), and (*g*). The Departments of Militia and Defence, Post Office, and Finance had charge of the cashing of cheques at par of Canadians who joined Imperial Units and the Canadian Patriotic Fund assisted by the Department of Soldiers' Civil Re-establishment had charge of the unemployment relief to former members of the forces.

3. While a vote of $50,000,000 was passed by Parliament, this was due mainly to a desire to make ample provision for the expected needs. Veterans' Associations and others forecasted a very gloomy winter during 1919-20 and while the Government did not share the view that there would be any widespread distress, it was thought desirable to make a sufficient appropriation to meet any circumstances which might arise. It was recognized that this would not necessarily mean finding the amount of money indicated, as an appropriation lapses at the end of the fiscal year. An appropriation voted by Parliament is not a grant but is merely authority to the Department of Finance to provide a given sum of money, should this sum be required for the purposes indicated.

4. Happily, owing to the economic condition being far more favourable than was anticipated by some, the expenditure fell far short of the authorization provided. The expenditure was as follows:—

RELIEF EXPENDITURE

Unemployment	$4,146,624 51	
Inadequate employment	438,189 38	
Soldier Settlement cases	398,877 61	
		$4,983,691 50
Transportation from place of residence to place of work	$ 44,989 81	
Transportation overseas	6,718 72	
		51,708 53
Exchange, Post Office Department	$ 165,432 56	
" Militia and Defence	167,164 71	
" Finance Department	191,758 16	
		524,355 43
Free clothing to S.C.R. patients	$ 15,763 28	
Pay and allowances to trainees taken on strength but subsequently not approved	2,365 22	
Care of neurological and sub-normal cases	7,663 68	
Loans to retrained men for tools and equipment	51,831 24	
Loans to disabled men for training and education	1,309 45	
		78,932 87
Gratuities to Canadians who enlisted in Imperial forces	.....	1,114,231 61
Transportation, say	.....	50,000 00
Amounts paid to or in respect of former members of the forces to the end of fiscal year 1919-20	.....	$6,802,919 94

ADMINISTRATION EXPENDITURE

Canadian Patriotic Fund	$ 210,533 32	
Soldiers' Civil Re-establishment	45,536 08	
		256,069 40
Total expenditure	.....	$7,058,989 34

Of this amount, $1,158,247.91 was charged to other votes.

5. Since the end of the fiscal year it has been necessary to continue expenditure along certain of the lines indicated and these have been charged to various departmental votes. The following expenditure is an indication:—

Gratuities to Canadians who enlisted in Imperial forces, paid by Militia and Defence	$1,681,679 98
Free clothing to S.C.R. patients, paid by Department of S.C.R.	66,509 10
Financial assistance to neurological cases and sub-normal cases, paid by Department of S.C.R.	56,716 68
Loans to disabled soldiers to purchase tools and equipment, and for re-education, paid by Department of S.C.R.	335,180 98
Total to October 31, 1920	$2,140,086 74

6. The total administration expenditure represented 3·7 per cent of the amount paid directly to former members of the forces under the Federal Emergency Appropriation.

REPORT

OF THE

MINISTER OF AGRICULTURE

FOR THE

DOMINION OF CANADA

FOR THE

YEAR ENDING MARCH 31, 1920

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 15—1921].

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REPORT

OF THE

MINISTER OF AGRICULTURE

1919-1920

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

May it Please Your Excellency:

I have the honour to submit to Your Excellency a report of the Department of Agriculture for the fiscal year ended March 31, 1920.

I.—GENERAL REMARKS.

The work of the department was carried out in a most efficient and satisfactory way and there will be found included herein a summary of the operations of the different branches of the department, all of which is laid before Your Excellency under their respective headings.

The legislation affecting the department during the period consisted of:—

Chapter 28, 9-10 George V, intituled, "An Act to amend the Live Stock and Live Stock Products Act of 1917." (Assented to 6th June, 1919.)

Chapter 22, 10 George V, intituled, "An Act to amend the Meat and Canned Foods Act." (Assented to 10th November, 1919.)

Chapter 24, 10 George V, intituled, "An Act to permit the temporary importation, manufacture and sale of Oleomargarine in Canada." (Assented to 10th November, 1919.)

By Order in Council approved under date the 4th April, 1919, the general regulations under "The Destructive Insect and Pest Act" approved under date the 17th of July, 1917, and amendments thereto, were further amended.

Vide "Canada Gazette," vol. LII, p. 3087.

By Order in Council approved under date the 19th April, 1919, the regulations under "The Destructive Insect and Pest Act" approved under date the 17th July, 1917, and amendments thereto, were further amended.

Vide "Canada Gazette," vol. LII, p. 3367.

By Order in Council approved under date the 19th May, 1919, the regulations under "The Destructive Insect and Pest Act" approved under date the 17th July, 1917, and amendments thereto, were further amended.

Vide "Canada Gazette," vol. LII, p. 3624.

By Order in Council approved under date the 26th May, 1919, the Order in Council approved under date the 23rd October, 1918 (P.C. 2591), *re* fibre flax seed in Canada, was rescinded.

Vide "Canada Gazette," vol. LII, p. 3825.

By Order in Council approved under date the 10th September, 1919, the regulations made under Order in Council of date the 26th October, 1918, in virtue of the provisions of "The Seed Control Act," chapter 23, 1-2 George V, establishing standards for seed grain, and under (P.C. 1463) of July 5, 1911, defining noxious weeds and establishing germination standards, were rescinded and consolidated regulations made and enacted.

Vide "Canada Gazette," vol. LIII, p. 843.

By Order in Council under date the 20th September, 1919, in virtue of "The Animal Contagious Diseases Act," 1903—R.S.C., 1906—Regulations for the establishment and maintenance of tuberculosis-free accredited herds of cattle, were approved.

Vide "Canada Gazette," vol. LIII, p. 990.

By Order in Council approved under date the 21st November, 1919, the regulations under "The Animal Contagious Diseases Act" approved under date the 30th November, 1909, and amendments thereto, were further amended.

Vide "Canada Gazette," vol. LIII, p. 1643.

By Order in Council approved under date the 28th November, 1919, the regulations under "The Destructive Insect and Pest Act" approved on the 17th July, 1917, and amendments thereto, were further amended.

Vide "Canada Gazette," vol. LIII, p. 1702.

By Order in Council approved under date the 5th February, 1920, regulations were established in virtue of the provisions of "The Oleomargarine Act, 1919."

Vide "Canada Gazette," vol. LIII, p. 2709.

A conference of Provincial Deputy Ministers of Agriculture was held in Ottawa, March 17 to 19, 1920, with a view to enlisting greater co-operation between the federal and provincial departments, thus making the efforts of the Federal Department of Agriculture of much more benefit to the agricultural industry.

A brief summary of the proceedings of this conference will be found as an appendix hereto (see Appendix No. 1).

II.—AGRICULTURE.

DAIRY AND COLD STORAGE BRANCH

The work of this branch is carried on under the four divisions of "Dairying," "Markets," "Cold Storage," and "Inspection of Dairy Products," and these divisions will be recognized in the following summary of the work and services carried out by the branch during the year.

Dairy Division.

PRICES FOR DAIRY PRODUCTS IN 1919.

Further new records were made in 1919 in the prices received for dairy products. During the early part of the season the price of cheese rose rapidly until the maximum of 32 cents f.o.b. shipping point was paid in some cases. The price of butter reached the maximum of 67 cents during the past month. The price of cheese in the primary markets averaged about 27½ cents per pound for the season. The price of butter on the same basis was about 54 cents.

THE PROGRESS OF DAIRYING IN CANADA.

The production of milk throughout the Dominion of Canada continues to increase. An ever-increasing quantity is required for direct consumption in the growing towns and cities. Statistics show also that the per capita consumption of milk is increasing.

During the season of 1919 a number of cheese factories were closed and the milk diverted to milk condensaries and milk powder factories. Some concern has been expressed in cheese circles regarding this diversion, but it seems to be a natural evolution in the dairying industry, and milk producers cannot be restrained from taking advantage of the best market available for their milk. The demand for condensed milk and milk powder, especially during the war period, has been very great and manufacturers of these products have been enabled to pay a large premium in excess of the returns received from the manufacture of cheese or butter.

There is some doubt as to the permanency of the increased production of condensed milk, and some apprehension is felt on the part of those interested in the cheese industry, who view with alarm what may be only a temporary closing of some of the factories. Should the demand for milk for condensing purposes fall off, the disorganization of the cheese factories which have been affected will be a rather serious matter.

The demand for milk for city consumption has induced the milk distributors to reach out into new territory for their supplies, and in some cases a sufficient amount of milk has been drawn away from cheese factories to reduce the output very considerably, thus making it difficult to conduct the factories with the remaining milk supply. One remedy for this state of affairs would seem to be to have the factories equipped in such a manner as to be in a position to sell milk or cream for market purposes when the price offered gives a better return than for the manufacture of cheese.

The total dairy production in Canada in 1919 is estimated as follows:—

	Pounds.	Value.
		$
Cheese	167,107,233	45,119,000
Creamery butter	98,903,686	52,500,000
Dairy butter	125,000,000	56,250,000
Condensed milk	110,000,000	20,000,000
Milk powder	5,323,537	1,662,352
Milk powder, cream, and ice-cream	.....	72,000,000
		247,531,352

The total value of all dairy products exported during the year is estimated at approximately $65,000,000.

The production of creamery butter by provinces in 1919 is shown in the following table:—

Province.	Pounds.	Percentages.
Quebec	35,409,837	35·8
Ontario	31,900,000	32·3
Alberta	10,500,000	10·6
Manitoba	8,256,711	8·4
Saskatchewan	6,600,000	6·7
British Columbia	2,290,000	2·3
Nova Scotia	2,093,804	2·1
Prince Edward Island	937,518	0·9
New Brunswick	915,816	0·9
	98,903,686	100·0
Eastern Canada	.....	72·1
Western Canada	.....	27·9

Ontario produced 61 per cent and Quebec 36 per cent of the cheese in 1919 the remaining 3 per cent being distributed among the other seven provinces.

The most notable feature of dairy production in Canada during recent years is the large increase in the production of condensed milk, which has grown from about 15,000,000 pounds in 1913 to 110,000,000 pounds in 1919. There has also been a large increase in the production of milk powder during the same period.

The dairying industry is developing steadily in the Prairie Provinces, especially in the manufacture of creamery butter. In 1910 the total output of creamery butter in Manitoba, Saskatchewan and Alberta was 5,478,304 pounds; in 1915, 12,872,645 pounds; and in 1919 it is estimated at 25,356,711 pounds. There is more butter manufactured to-day in the city of Edmonton, Alberta, than in any other centre in Canada, the total output in 1919 being approximately 7,000,000 pounds in four creameries, one of them being the largest in Canada.

An important development of creamery butter making is taking place in Nova Scotia. Several large creameries have recently been established, and the indications are that the manufacture of creamery butter will show very considerable increase in the coming years.

The cheesemaking industry in the province of New Brunswick has been put on a better basis by the organization of a marketing system and provision for the grading of cheese. A marked improvement was made in the quality of New Brunswick cheese during the past season, and a very much better relative price has been obtained on that account.

POLICY OF THE BRITISH MINISTRY OF FOOD.

Early in the season it was announced that the ministry would purchase no more dairy produce in Canada, and that imports would be allowed to flow through the usual channels. Following this announcement a special demand arose in the United Kingdom for limited quantities of Canadian cheese at advanced prices, and Belgium and other continental countries began to make inquiries and in some cases place definite orders for Canadian dairy products. This started speculative buying, which forced prices considerably higher than the actual market value. During the month of July the European demand suddenly collapsed, largely owing to the difficulties of finance, and at the same time the Ministry of Food announced that, effective August 8, an order would be issued requisitioning all cheese on arrival in the United Kingdom at the importers' maximum selling price of 28 cents.

This announcement, coupled with the disappointing condition of the European market, stopped buying almost instantly in Canada.

In the meantime representatives of the Butter and Cheese Committee of the British Ministry of Food came to Canada and announced that they were prepared to purchase 20,000 tons of Canadian cheese at 25 cents delivered in Montreal. This announcement caused considerable dissatisfaction. Many producers evidently looked upon the offer to purchase as a continuation of the policy which had been in force in 1917 and 1918. There was, however, this important difference, that producers were not obliged to accept this offer. Other channels for disposing of the produce were left open, and in a short time conditions on the continent improved and further sales were made to Belgium at a higher price than that offered by the committee.

The Committee did not secure the whole of the 20,000 tons until some time after the new year, when large stocks which had been purchased and held on speculative account were turned over at a heavy loss. During the past winter the British Ministry of Food has purchased Canadian cheese in Belgium at a price equivalent to 25 cents in Canada, although this same cheese was sold to

Belgium by Canadian and American exporters at a much higher price. The ministry has also purchased on the continent Canadian and American butter for which satisfactory settlement could not be made.

MARKETS FOR CANADIAN DAIRY PRODUCE.

There is no lack of markets for Canadian dairy produce. The difficulties of finance and the loss on exchange have prevented extensive sales being made to continental Europe, but the United Kingdom is prepared to take all the dairy produce Canada may have to offer, and there is every reason to believe that prices will rule high for some time to come. It does not appear at all likely that there will be a permanent market on the continent for Canadian dairy products, but until these countries re-establish their own dairying industries the shortages resulting from the destruction of the war will be a factor in determining prices.

SCARCITY OF RENNET.

The supply of rennet, used in the manufacture of cheese, is now very nearly, if not quite, equal to all demands, and the use of pepsin is being discontinued, as cheesemakers prefer to use the rennet extract.

FINCH DAIRY STATION.

The Finch Dairy Station was established in 1912, when the premises and goodwill of two small competing cheese factories located within a mile of each other were purchased by the department and a new building erected in the village of Finch, Stormont county, Ont.

The increase in the quantity of milk as shown in the table below indicates the success of the establishment in that respect.

Year.	Milk Received.	Net Return to Patrons. Per 100 lbs.	Total Amount Distributed to Patrons.
	Lbs.	$	$
1912	2,069,281	1 11	23,304 49
1913	2,720,028	1 04	28,214 73
1914	2,356,202	1 19	28,108 74
1915	2,418,010	1 35	32,640 85
1916	2,486,380	1 60	39,779 88
1917	2,807,885	2 00	56,173 46
1918	3,859,217	2 14	82,785 69
1919	5,480,816	2 49	136,540 56

It will be observed that the quantity of milk was practically doubled from 1917 to 1919.

The operation of the Finch Dairy Station has demonstrated the following points:—

1. That a Government institution may be operated at a profit.

2. That it is advisable in many localities, where there is competition for the milk supply for other purposes, to have factories equipped in such a manner as to permit of the manufacture of cheese, butter, or the sale of milk and cream at a moment's notice, in order to take advantage of the best market available. In this way the patrons of the factory are not so likely to be induced to dispose of their milk through other channels.

3. That there is a large and unsatisfied demand in Canada for cheese for family use of 5 and 10-pound sizes.

4. That the patrons of a factory appreciate good service and are willing to pay a reasonable rate for manufacturing if they get value.

5. That a large saving in fuel expense can be effected by utilizing exhaust steam for heating purposes.

6. That the operation on commercial lines of a cheese factory and creamery is a decided advantage to the Dairy Branch in its work of advising the manufacturers of butter and cheese, and outlining policies for the improvement of the manufacturing end of the dairy business.

MADAWASKA CREAMERY.

The Madawaska Creamery at St. Hilaire, N.B., was operated again during the season of 1919, on the understanding that at the end of the year it would be transferred to the provincial Department of Agriculture.

There was a very considerable increase in the cream supply, and the success of the creamery appears to be assured. It should be of great assistance to the milk producers in that part of the province, where dairying is capable of great expansion.

DOMINION EDUCATIONAL BUTTER SCORING CONTEST.

A Dominion Educational Butter Scoring Contest was carried on by the Dairy Division during the season of 1919. It was arranged to have four creameries in each province send samples of their butter to a Montreal warehouse during the first week in each month from May to October, inclusive, for the purpose of being compared and judged on the same standards. Full particulars as to conditions and methods followed in making the butter were required with each sample.

The objects of the contest were: to promote uniformity in the quality and character of Canadian butter as a whole; to discover as far as possible the best methods of handling cream and making butter, in order to produce the type most in demand in the markets at the present time; to find out if it is possible to make the highest grade of butter in all the provinces; to establish a standard type of butter, which will meet the requirements of the export trade and also be suitable for the best markets in Canada; and to promote a healthy rivalry in the different provinces in the making of finest quality butter.

The results of this contest show that the highest grade of butter can be made in every part of Canada, and that there is a very remarkable uniformity in the type and character of the best butter made in every district.

The samples of butter were retained by the department and used by the officers of the Dairy Division for demonstration purposes at the provincial dairy conventions, dairy schools, and other places during the past winter.

A full report of the contest has been prepared by the Chief of the Dairy Division as Bulletin No. 56 of the Dairy and Cold Storage Series, and is now available for distribution.

The contest will be repeated in 1920.

COW TESTING.

The Dairy Branch has for many years encouraged the keeping of records of production of individual cows, both by propaganda and active work under different plans. In 1919 one officer was employed in each province, except British Columbia, to supervise and encourage the work as much as possible. Arrangements are made with cheesemakers, buttermakers, or other persons properly equipped, to test samples of milk as brought to them by the owners of herds, and the records thus obtained are forwarded to the office at Ottawa,

where they are compiled and reports sent to the individual owners of herds. During the year 1919 the number of records sent into the department from the different provinces was as follows:—

TOTAL NUMBER OF HERDS, COWS, TESTING CENTRES, AND BABCOCK TESTS MADE BY PROVINCES, 1919.

Province.	Herds.	Cows.	Testing Centres.	Samples Tested.
Alberta	64	820	26	2,539
British Columbia	34	215	5	1,235
Saskatchewan	74	773	16	2,712
Manitoba	83	1,035	22	3,793
Ontario	417	4,214	70	18,204
Quebec	1,046	10,374	137	42,428
New Brunswick	250	1,065	18	5,144
Nova Scotia	207	2,714	37	12,623
Prince Edward Island	241	1,307	17	5,907
Totals	2,416	22,517	348	94,585

These figures do not by any means represent the total number of cows under test, as a large number of farmers are keeping their own records. This department supplies, free of charge, blank forms and instructions for keeping records to all farmers who apply for them.

A great many owners of herds start keeping records in the spring but fail to continue for the full lactation period. In some cases it has been found impracticable to make provision for the testing of samples during the winter months.

The next table gives the average production per cow for the herds which were tested for the full lactation period, and a comparison is made with previous years.

COMPARISON OF AVERAGE PRODUCTION BY PROVINCES FOR YEARS 1915, 1916, AND 1919.

Province.	Average Production.					
	1915.		1916.		1919.	
	Milk.	Fat.	Milk.	Fat.	Milk.	Fat.
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
British Columbia					6,669	262·8
Alberta					5,198	190·7
Saskatchewan	4,392	169·2	4,818	190·1	4,944	192·9
Manitoba					5,177	183·4
Ontario	6,294	217·4	6,061	212·3	6,725	243·0
Quebec	4,472	172·9	4,856	188·0	4,793	182·8
New Brunswick	4,558	183·3	4,486	181·8	5,857	235·6
Nova Scotia	4,909	200·7	5,083	208·0	4,962	195·5
Prince Edward Island	5,235	198·8	5,616	214·1	6,586	243·4
General averages	5,285	195·5	5,417	200·7	5,522	207·9

(The test in 1915 was 3·69, while in 1919 it was 3·7, a very slight increase.)

This table shows that from one year to another there is a gradual increase in the production of the cows recorded at the Dairy Branch. Quite a few of the herds are the same for a number of years, but there are also a great many new herds, and after a few years the cows will be practically all different. This means an increase in production from one generation to another, and is due to better breeding and feeding.

If these figures can be taken as an indication that the production of the dairy cow is being increased from one year to another, and I think they can, it means that the value of dairy products is being added to yearly to quite an appreciable extent. For example: if every one of the 3,500,000 dairy cows in Canada had given 237 pounds more milk in 1919 than in 1915, the increase in milk production would have been over 829,000,000 pounds, valued at over $21,000,000.

The consistent use of the scales and Babcock test to get accurate knowledge of the production of each cow, and then a wise use of this knowledge to weed out the poorer animals, and use better feeding methods, will surely pay real money by the increased production of the herd.

It has always been open to question whether this cow testing work was not more properly a provincial function. In some of the provinces at least the Departments of Agriculture would seem to have just the kind of organization best suited to give effective direction to cow testing. No official in the whole field of government aid to agriculture in Canada is in a better position to promote the keeping of dairy records than the district or county representatives. At a conference of provincial deputy ministers recently held in Ottawa the Dairy and Cold Storage Commissioner was authorized to announce that when any of the provinces were prepared to take over this work the federal department was ready to make the transfer.

Markets Division.

MARKET REPORTING SERVICE.

A market reporting service covering butter and cheese was inaugurated and carried out during the period from May to December, inclusive. Prepaid night lettergrams were sent out twice a week to at least two leading dairy officials in each province, quoting the prices paid on the day in question for butter and cheese delivered at Montreal and Toronto. The receivers of these messages disseminated the information among the factorymen in their respective districts. On request a similar collect telegram was sent regularly direct to butter and cheese factory salesmen or managers. On Monday of each week a Dairy Produce Market Letter was issued, containing a review of the markets of Montreal, Toronto, and New York for the preceding week, with special reference to the export trade in butter and cheese. The Dairy Produce Market Letter is sent free to any person who applies for it.

DAIRY NEWS LETTER.

Another service known as the Dairy News Letter was inaugurated during the year. This letter is published on the 10th of each month. It contains extracts from the letters of correspondents in all the important dairying countries of the world, items of dairy news gleaned from journals and other publications. It also contains news respecting the activities of the branch, and other information which would not be likely to reach the public through any other channel.

The dairy officials of the Provincial Department of Agriculture were asked to co-operate in making the Dairy News Letter a success by sending once a month brief notes that would be of interest to Canadian dairymen in general. The request was well received and the information furnished by provincial dairy commissioners and other officials has appeared in the Dairy News Letter from time to time.

The market and dairy news services were carried on at small cost, and seem to be appreciated by manufacturers of and dealers in butter and cheese.

One of the chief objects of these services, and of the Dairy News Letter especially, is to promote a more general interest in the various aspects of the dairying industry, and to encourage a broader outlook on the part of those engaged in it. This seems to be advisable now that dairy produce has become an article of international commerce. The Dairy News Letter is sent free to every cheese factory and creamery in Canada, and to all other applicants.

INSPECTING HAY FOR ALBERTA.

Owing to a shortage of feed in the province of Alberta, it was considered necessary by the provincial authorities to purchase hay in Ontario and Quebec for shipment to the farmers in Alberta, and, at the request of the Minister of Agriculture for Alberta, it was agreed to provide inspection for the hay so purchased at the railway station where it was loaded. This inspection was carried on by the Markets Division, and up to the end of the fiscal year 713 carloads, aggregating 9,300 tons of hay, had been graded and inspection certificates issued therefor. By the end of April the number of cars inspected will exceed 1,000.

CARGO INSPECTION.

The usual staff of cargo inspectors was maintained during the season of navigation at the port of Montreal and the year round at the chief ports in Great Britain. An inspector was also stationed at Halifax throughout the year. These men reported the condition of perishable products as they were loaded into steamers and unloaded on the other side, and the manner in which these products were handled by the longshoremen. They also supervised the handling to as great an extent as possible, and placed self-recording thermometers, known as thermographs, in the holds of steamers along with butter, cheese, eggs, meats, fish, fruit, etc., so that records of temperature were available for each cargo. At Montreal 333 thermographs were placed in steamers sailing for Europe. Eighteen thermographs failed to register, but 315 records of temperature were obtained, as follows:—

77 in cold storage with butter, meats, poultry and fish,
30 in cooled air space with apples, eggs, meats and cheese,
208 in ordinary stowage with cheese, meats, eggs, and apples.

The Markets Division made and distributed 1,260 blue-print copies of these records. At the port of Halifax 55 thermographs were placed, practically all with apples, 330 copies of these records were made and furnished to steamship companies, fruit shippers, and others interested.

REFRIGERATOR CAR INSPECTION.

The special refrigerator car services for butter and cheese which are arranged for each year by the Markets Division were in operation from May 12 to October 4, inclusive. The inspectors at Montreal, Toronto and Halifax examined these refrigerator cars as they arrived, reported the quantity of ice in the bunkers, the sanitary condition of the car, the manner of stowage, the number of packages and weights, and the temperature of the butter as determined by actual tests with a thermometer. Daily reports were made on these cars, and any defect in the service was brought to the immediate attention of the railway company. At Montreal, during the period referred to, the inspectors reported on 1,040 cars, which contained 290,491 packages (18,800,825 pounds) of butter. The average temperature of the butter for the season, delivered by the various railroads, ranged from 51.73 to 54.30 degrees. The Montreal inspectors' reports also covered 619,631 boxes of cheese. These reports referred to the stowage of the

boxes and to the condition of same when unloaded. When reports indicated that breakage was due to improper loading at the railway stations the facts were communicated to the railway company, and the latter reprimanded the agent at fault.

Cold Storage Division.

THE GRIMSBY PRECOOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE.

This establishment is still operated on commercial lines, and is taxed to capacity during the fruit shipping season. The fruit-growers in the Grimsby district have become so convinced of the necessity for refrigeration in preparing tender fruits for shipment, and for holding small quantities while a carload is being accumulated, that much greater space is now required to serve the district.

It was proposed at the end of last season to remodel the establishment by substituting mechanical refrigeration for the gravity brine system with which the warehouse is now equipped. This would treble the storage space by utilizing the present ice-chamber for storage rooms, and with a greater reserve of refrigerating capacity the fruit passing through the warehouse could be cooled more rapidly, and thus add further to its capacity. Investigation, however, showed that there would be difficulty in getting the work done in time for the coming season, and also that the cost of making the alterations would be excessive at the present time.

Some experiments were conducted during the past season in the storage of grapes of different varieties and in different styles of packages. Full particulars of the tests were published in a circular (Grimsby, No. 6) issued and distributed to all grape-growers. Briefly, it was found that certain varieties of grapes, including the Agawam, Lindley, Vergennes and Black Rogers, could be preserved for the Christmas trade, and that there is a market for a considerable quantity at prices which would pay the grower a premium over the cost of storage and packing.

COLD STORAGE SUBSIDIES.

The following particulars respecting the payment of subsidies under the Cold Storage Act since its enactment in 1907 are published for general information:—

Number of warehouses erected under subsidy		34
Total refrigerated space		4,978,304 cu. ft.
Total cost		$2,408,354.85
Subsidies paid	$699,242.41	
Instalments withheld	14,024.00	
Instalments not yet due	9,240.00	
Total subsidies	$722,506.41	

By an Order in Council of May 26, 1919, the payment of subsidies under the Act is limited to public cold storage warehouses erected and operated by municipal or other governing bodies.

Subsidies contracted for have all been paid in full except two, in one of which the fifth and last instalment of $600 is due, and in the other the third, fourth and fifth instalments, amounting to $4,320, are yet to be paid.

A complete list of all cold storage establishments in Canada has been compiled by the division, and any person may obtain a copy by applying to the Dairy and Cold Storage Commissioner.

CREAMERY COLD STORAGE BONUSES.

This is a departmental arrangement whereby a bonus of $100 is paid to assist creameries in erecting suitable cold storage for butter awaiting shipment. The storage must be built according to plans and specifications supplied by the department. The bonus is paid after one season's satisfactory operation. The following is the record of the year under review:—

Number of applications received in 1919–20	26
Number of applications refused in 1919–20	2
Number of applications held over to 1920–21	2
Number of bonuses paid 1919–20	22
Amount paid	$2,200.00

The number of bonuses paid since this form of assistance to the creamery industry was inaugurated now amounts to 1,056, or $96,775.25. The odd figures are accounted for by the fact that for one or two years certain bonuses were based on a percentage of the cost of the cold storage.

TERMINAL COLD STORAGE WAREHOUSE AT MONTREAL.

Largely on the representations of the Department of Agriculture, the Harbour Commissioners of Montreal have undertaken the erection of a large modern, fire-proof cold storage warehouse on the harbour front at Montreal, and construction is now under way.

This warehouse will be located on the harbour front, with trackage facilities and berths for steamers, and will provide facilities very badly needed for the export trade in meats, dairy produce, and other perishable foods.

SMALL COLD STORAGES.

The Cold Storage Division receives many inquiries respecting the erection of small automatic cold storages, suitable for country homes, hotels, stores, and farmers' use. Bulletin 49 of the Dairy and Cold Storage Series contains several plans for these small cold storages in which ice only is used as a refrigerant, and also some plans of combined ice-house and dairy. These small cold storages are constructed on the principle of a house refrigerator, with an ice-chamber large enough to hold the season's supply. The bulletin referred to, together with blue-prints of the plans on a working scale, are sent to any person who applies for them.

Inspection of Dairy Products Division.

ADMINISTRATION OF THE DAIRY AND OLEOMARGARINE LAWS AND REGULATIONS THEREUNDER.

The enforcement of the laws dealing with the manufacture and sale of oleomargarine was carried on in the same manner as in previous years. Owing to the sale of oleomargarine it was necessary to increase the staff of inspectors during the year. There are now employed one chief inspector, six inspectors, and two inspectors who give part time to the work.

The following circular was issued in June last:—

"*To Manufacturers of and Dealers in Butter.*—

"In order to safeguard the reputation of Canadian butter, as well as to protect the consumer, the honest manufacturer and the honest trader, it is essential that all butter should comply with the legal standards

and requirements. In other words butter must contain not more than sixteen per centum of water, must be of the correct weight and must be properly marked or branded. The incorporation of more than the legal maximum of water is a dishonest practice and is the more reprehensible since the ordinary consumer has no means of detecting the fraud. It is apparent that many manufacturers of butter are aiming to incorporate the full legal maximum of water, and do not allow sufficient margin for errors in sampling and testing, with the result that the butter frequently contains slightly more than sixteen per cent of water. Manufacturers of and dealers in butter which does not comply with legal requirements are liable to prosecution under the Dairy Industry Act, 1914, and regulations made thereunder, and the illegal product as well as the machinery and equipment used in manufacturing the same are liable to seizure and confiscation.

" Regulation 16 passed under authority of the Dairy Industry Act, 1914, and which became operative on the first day of September, 1918, reads as follows:—

" 'Any person charged with the enforcement of this Act may with the consent of the minister,—

" '(*a*) Seize and confiscate any apparatus or materials used or intended to be used in the manufacture of any butter, cheese or other dairy product or imitation thereof in contravention of any of the provisions of this Act or of any regulations made thereunder;

" '(*b*) Seize and confiscate any apparatus used in the treatment of milk, butter, cheese or other dairy product when such treatment causes the said milk, butter, cheese or other dairy product to contravene any of the provisions of this Act or of any of the regulations made thereunder;

" '(*c*) Seize and confiscate any illegal dairy product as defined in this Act.'

" The foregoing regulation covers such violations as excess of water (over 16 per cent), short weight prints, etc.

" In administering the Act and regulations in the past, the powers conferred by this section have not been generally employed, offenders having been usually dealt with by prosecution in court. In cases of a slight excess of water, apparently due to errors in sampling and testing, manufacturers have frequently been let off with a warning. This practice will not be continued, and in future cases of slight excess of water will be dealt with in the same manner as if the excess were due to deliberate intent to defraud. Manufacturers must allow sufficient margin to avoid danger of exceeding the limit. In order to secure a better observance of the law, the authority to seize and confiscate materials, products and apparatus will be more generally acted upon. Dealers as well as manufacturers will be held strictly accountable for any violation of the Dairy Industry Act and Regulations, and are warned that in order to avoid loss and annoyance through confiscation and prosecution all necessary precautions should be taken to assure themselves that the product meets all legal requirements."

A copy of this circular was sent to all creameries and to the principal wholesale dealers in butter. As a result of this warning most of the wholesalers equipped themselves with moisture tests for butter, and began the testing of each lot of butter purchased. Many of the manufacturers who were incorporating excessive water in the butter were detected in this way.

During the year, 3,226 samples of butter were tested by the inspectors for water content. The average water content of all samples tested was 14·55 per cent. Of the number tested 545 contained more than 16 per cent of water.

Comparatively few samples of oleomargarine are tested for water-content. The average water-content of oleomargarine is slightly over 12 per cent and no sample has yet been tested containing more than 16 per cent. An excess of water cannot very easily be incorporated in oleomargarine.

Following is a list of convictions secured and fines imposed, classified by provinces as well as offences:—

CONVICTIONS, YEAR ENDING MARCH 31, 1920.

Province.	Excess Water.		Short Weight.		Oleomargarine Act.	
	Number of Convictions.	Fines.	Number of Convictions.	Fines.	Number of Convictions.	Fines.
British Columbia	Nil		Nil		Nil	
Alberta	Nil		2	$20 00	Nil	
Saskatchewan	11	$140 00	7	120 00	Nil	
Manitoba	14	210 00	Nil		Nil	
Ontario	18	295 00	Nil		6	$110 00
Quebec	58	1,070 00	18	310 00	5	185 00
New Brunswick	2	(Costs)	Nil		Nil	
Nova Scotia	1	10 00	Nil		Nil	
Prince Edward Island	2	40 00	Nil		Nil	
Totals	106	$1,765 00	27	$450 00	11	$295 00

SUMMARY.

Offence.	Number of Convictions.	Fines.
Excess water	106	$1,765 00
Short weight	27	450 00
Oleomargarine Act	11	295 00
Totals	144	$2,510 00

During the previous fiscal year there were only 29 convictions, while fines imposed totalled $795.

The authority to seize and confiscate goods on account of violations of the Dairy Industry Act and Regulations, as well as the Oleomargarine Act and Regulations, was first used during the past year. The confiscations made, amounts confiscated, and net proceeds realized from the sale of the same were as follows:—

BUTTER.

Offence.	Number of Confiscations.	Pounds Confiscated.	Net Proceeds.
Short weight prints	15	534	
Excessive water	4	1,472	
Total	19	2,606	$861 46
Oleomargarine sold as butter	14	12,674¼	$3,761 21

The high price of butter is no doubt responsible for the increase in the number of violations on account of excessive water in butter and short weight prints, while the wide difference between the price of oleomargarine and butter makes the practice of substituting oleomargarine for butter a very lucrative one.

PUBLICATIONS.

The publication of an annual report giving the detailed operations of this branch has been discontinued, the last report issued being for the year ending March 31, 1915. By the time an annual report is written, printed and distributed much of the information presented has become so old as to have lost very much of its value. In place of the annual report the policy now is to issue special circulars or bulletins as soon as the information is available. To some extent the Dairy News Letter, already referred to, is utilized for this purpose.

Circular No. 27, "Yield and Relative Value of Some Dairy Products," of the regular series was issued during the year.

The following special circulars, of interest to a limited number of persons only, were duplicated and distributed on special lists:—

Dairy Division—
"Dairy" No. 1. The Manufacture of Casein.
" No. 2. Caerphilly Cheese.

Cold Storage Division—
"C.S." No. 1. List of Cold Storage Warehouses in Canada.
" No. 2. List of Cold Storage Warehouses in Canada subsidized under the Cold Storage Act, 1907.
" No. 3. The storage of Ice for Summer Use.

Grimsby Pre-Cooling and Fruit Storage Warehouse—
"Grimsby" No. 2. The Storage of Cabbage.
" No. 3. The Storage of Grapes.
" No. 4. Canadian Grapes in the United Kingdom.
" No. 5. Report for the Season of 1919.
" No. 6. Grape Storage Tests at Grimsby.

Copies of any of these circulars may be obtained on application to the Dairy and Cold Storage Commissioner.

CORRESPONDENCE.

A large amount of correspondence on a great variety of subjects connected with the dairying industry and the transportation and storage of perishable food products is conducted by the Dairy Branch. This line of work is looked upon as a very important one, and considerable attention is paid to the collection and tabulation of information in order that inquiries may be answered promptly, and as fully as possible.

A War Office Agency.

Although it was not directly connected with the Department of Agriculture, and did not involve the expenditure of Canadian money, it seems to be desirable to place on record a brief account of the important work carried out by the Dairy Branch on behalf of the Imperial War Office in the purchase and shipment of hay, oats and flour during the first three years of the great war, for the use of the expeditionary forces in France and other theatres of the war.

Shortly after the war started the War Office requested the Canadian Government to forward supplies of hay from Canada. It was specified that the hay should be compressed into bales of special size and of great density to save space in transportation. The first order was entrusted to an experienced hay dealer, but in the course of a few weeks it was found necessary to make some change as the business had reached a state of confusion that could not be tolerated any longer. The business was turned over to this department and placed in charge of Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, and some of his assistants.

A recompressing plant for the hay, which had already been set up in a new harbour shed at Montreal, was reorganized and enlarged, and other plants were established at different times at Charlottetown, P.E.I., Windsor, N.S., Woodstock, N.B., and at Calgary, Alta. The outputs of three single compressors, privately owned, in the province of Quebec, were also handled at times. The Montreal plant was operated night and day for many months at a capacity of 1,000 to 1,100 tons in twenty-four hours.

Later on the purchase of oats was added to the hay business. The oats were required in bags containing 80 pounds each. Bagging facilities were installed by the railway and elevator companies to meet the situation at Port McNicoll, Midland, Port Colborne, Kingston, at the four Montreal elevators, and at West St. John, N.B. The oats were purchased largely through brokers on the Winnipeg Grain Exchange, shipped in bulk to the bagging points, and then forwarded to Montreal or the winter ports for overseas shipment. Millions of bags were purchased for this purpose, for which the raw material was mostly imported from Calcutta.

In 1915 the purchase of flour was added to that of forage, and in such quantities that every mill in Canada was invited to accept contracts.

A mere statement as to the quantities and values of these articles purchased and shipped overseas through this agency will suffice to show the enormous amount of business transacted.

TOTAL VOLUME OF BUSINESS.

	Tons.	Value.
		$
Hay	481,250	11,442,563 46
Oats	1,300,418	52,231,441 63
Flour	492,391	34,957,563 36
Totals	2,274,059	98,631,568 45

The figures given above represent 76,495,221 bushels of oats, and 12,309,776 bags of flour (80 pounds each for which approximately 24,000,000 bushels of wheat were required.

These large transactions were carried out, as far as the management and accounting were concerned, by the regular staff of the Dairy Branch, without any outside assistance except that of a flour expert sent out by the War Office to assist in the handling of that commodity.

A firm of chartered accountants was employed to audit these accounts of expenditures, and their final report was as follows:—

Ottawa, April 15, 1920.

The Honourable,
The Minister of Agriculture,
Ottawa.

Sir,—We have the honour to report that, having been appointed in July, 1917, to audit, on behalf of the British War Office, the accounts of expenditures by the Department of Agriculture, through the Dairy Commissioner, for the purchase of hay, oats and flour, we have checked in detail vouchers covering all disbursements for merchandise purchased, for necessary operating supplies, and for the salaries and wages of the officials and labour employed in connection with the undertaking.

The extent of these expenditures—covering the period from October, 1914, until some months subsequent to the ending of hostilities, and involving a gross outlay of over one hundred millions of dollars—naturally necessitated a good deal of time for the audit. Interim reports, however, (the first of November, 1917), were submitted from time to time, and in connection with each report the amounts credited in the books of the commissioner as advances received were verified through correspondence with the Finance Department. We have necessarily delayed a final report and certificate until the disposal of all plants and supplies and adjustment and settlement of all outstanding accounts were completed.

The "General Statement of Disbursements and Refunds by the Department of Agriculture, to March 29, 1920, for account of the Imperial Government (War Fund Account)"—signed by the Dairy Commissioner and war fund accountant—shows net expenditures, after adding all expenses for operation and deducting all refunds, etc., as follows:—

For Flour	$34,957,563 36
" Oats	52,231,441 63
" Hay	11,442,563 46
	$98,631,568 45

We are pleased in certifying that the above amounts correspond with the books of the war fund accountant; that vouchers for all such expenditures were produced, and that the amounts agree with the aggregate of advances by the Dominion Finance Department, as certified by the chief accountant of the latter department in a communication to us, dated the 12th of April, 1920, a copy of which is attached hereto.

We would further acknowledge that every facility was afforded us to make a thorough examination of the accounts and that all explanations required were promptly forthcoming.

In conclusion, we trust we may be permitted to express our appreciation of the very efficient and business-like manner in which this really large undertaking was entered upon and carried through to a successful termination by the Dairy Commissioner, the war fund accountant, and their staffs. The Department of Agriculture is to be congratulated in enjoying the services of officials capable, in addition to their many other routine duties, of handling successfully and economically such a large operation during the stress and strain of the war.

We have the honour to be, sir,

Your obedient servants,

Sgd. CUNNINGHAM & CO., C.A.,
Auditors.

PURCHASE OF HAY FOR UNITED STATES GOVERNMENT.

Early in 1917 the War Office intimated that no further supplies of hay would be required from Canada, but that the compressing plant should be kept intact in case of further need.

When the United States entered the war it was suggested to the War Department at Washington that the idle hay compressing plant at Montreal might be made of service to them in securing supplies of hay for the use of the United States expeditionary force, as it was well known that no such facilities existed in the United States.

The suggestion was very readily accepted by the quartermaster-general and an agreement was entered into whereby the Department of Agriculture would purchase Canadian hay along the same lines as had been followed for the War Office, have it recompressed at Montreal and shipped to American ports as required, charging the cost price of the recompressed hay loaded on cars plus 50 cents per ton for the use of the plant at Montreal. Before the war ended the total quantity of hay supplied to the United States Government amounted to 205,744 tons, on which the charge for the use of the plant amounted to $102,872. In this way the original cost of the plant was refunded to the War Office.

THE SEED BRANCH.

The main divisions of the Seed Branch are Seed Markets Intelligence, including production and marketing; Seed Testing; Seed Inspection and Seed Purchasing Commission.

Seed production is promoted in co-operation with the Experimental Farms Branch, the Canadian Seed Growers' Association and provincial Departments of Agriculture. The foundation stock seeds produced by plant breeders attached to Dominion or provincial experiment stations are multiplied and maintained in their purity largely by members of the Canadian Seed Growers' Association. The product is known as registered or improved seed and provides the seed stocks for field crop competitions, seed fairs and exhibitions. Field root and vegetable seed growing, which was formerly limited entirely to Europe, has been encouraged in Canada with generally satisfactory results.

Seed markets information has been supplied to both the seed growers and the seed trade. Growers have been assisted in finding markets both in Canada and abroad, and the trade has been kept in touch with sources of supply.

Seed testing continues to increase with the growing demand of farmers and gardeners to know the quality of their seeds. The control of importations and the extension of the grading system have also added very materially to the work of the seed laboratories.

Seed inspection has been extended within the year to certify as to the quality of fibre flax seed being exported to Ireland. The providing of seed grades for cereal grains and other farm seeds for the Seed Purchasing Commission, the seed trade and seed growers has made heavy demands on the Seed Inspection Division. These duties are in addition to the regular work of policing the seed trade.

The Seed Purchasing Commission has provided against seed shortage especially in the Prairie Provinces. During the past season over two million bushels of seed grain have been purchased, cleaned and distributed at cost to meet the needs of districts which had suffered from drought, frost and insect pests. At writing, practically all of the $3,800,000 advanced for this purpose has been returned to the Receiver General, and with the disposal of surplus stocks an even balance is anticipated.

Markets Intelligence Division.

The work of the Seed Markets Intelligence Division includes the administration of subventions on account of field crop competitions, seed fairs and provincial seed exhibitions; general encouragement to seed production; seed markets reporting and seed markets extension.

SEED PRODUCTION.

Subventions were paid to provincial Departments of Agriculture to encourage field crop competitions, local seed fairs and provincial seed exhibitions. The amounts paid the provinces approximated one-half the total cost of conducting these services. They have been the means of encouraging the more general use of good seed in Canada and have indirectly created seed supplies for commerce. Most of the provinces conducted more competitions in 1919 than in the previous year.

FIELD CROP COMPETITIONS

Subventions were paid for field crop competitions conducted in 1919, as follows:—

	Number.	Subvention paid.
		$ cts.
Prince Edward Island	6	668 67
Nova Scotia	8	841 06
New Brunswick	14	899 47
Quebec	175	7,981 18
Ontario	171	13,327 33
Manitoba	25	2,047 08
Saskatchewan	17	1,311 35
Alberta	7	1,261 99
	423	28,338 13

The total subvention paid for field crop competitions was $4,405.61 more than in the previous year, the general increase in the number conducted being fifty-five for the Dominion. This increase was chiefly confined to the provinces of Alberta and Quebec.

LOCAL SEED FAIRS

Local seed fairs were held during the calendar year 1919 and subventions were paid as follows:—

	Number.	Subvention paid.
		$ cts.
Prince Edward Island	3	143 76
Nova Scotia	5	250 00
New Brunswick	11	516 17
Quebec	64	3,068 83
Ontario	12	335 40
Manitoba	52	1,536 86
Saskatchewan	48	2,001 48
Alberta	14	570 67
British Columbia	1	50 00
	210	8,473 17

The number of seed fairs was increased by fifty-seven, principally in Manitoba and Saskatchewan. The total subvention paid was increased by approximately $1,500.

PROVINCIAL SEED EXHIBITIONS

Following are the provincial seed exhibitions and subventions paid thereon:

New Brunswick	$366.66
Quebec	484.00
Ontario, Guelph	400.00
Ottawa	600.00
Manitoba	600.00
Saskatchewan	343.00
	$2,793.66

Subventions paid were about $500 less than the previous year. Alberta did not conduct an exhibition in 1919, while the three Maritime Provinces conducted an exhibition jointly at Fredericton, N.B., known as the Maritime Seed Fair.

ASSISTANCE TO CANADIAN SEED GROWERS' ASSOCIATION.

Financial support to the work of the Canadian Seed Growers' Association was continued during the year to the extent of $7,500 from the Seed Branch appropriation. The last annual report of the association shows 412 members and 1,644 other growers engaged in the production of registered and improved seeds.

FIELD-ROOT AND VEGETABLE SEEDS

By special arrangement the subvention available to British Columbia on account of field crop competitions and seed exhibitions was devoted to encouraging the production of field root and vegetable seeds, which, because of climatic conditions, may be grown to better advantage there than elsewhere in Canada The expenditure for this purpose was $1,241.62, an equal amount being contributed by the provincial Department of Agriculture.

During the past year a branch office was opened in Penticton, B.C., with Mr. A. McMeans, Seed Production Specialist, in charge. Stock seeds of field-root and vegetable seeds were purchased from the Experimental Farms Branch, the Ontario Agricultural College, and private growers in Eastern Canada, and distributed at cost for commercial seed production in British Columbia. Both the rootlings and growing seed crops are inspected in the field and the threshed and recleaned seed is finally certified for market. Canadian and British seed houses have supplied seed stocks and taken growing contracts for the product. Flower seeds, especially sweet peas, are also being grown on this basis.

The production by provinces of field root and garden vegetable seeds in 1919 was as follows:—

Prince Edward Island	5,955 pounds
Nova Scotia	6,839 "
New Brunswick	152 "
Quebec	1,120 "
Ontario	166,760 "
British Columbia	150,000 "

Production in Ontario was confined chiefly to sugar-beet seed, while the Maritime Provinces and Quebec produced swede turnip seed. The seed crop of British Columbia included most of the standard varieties of field roots and garden vegetables.

SEED MARKETS REPORTING

Market circulars were compiled and issued bi-monthly during the trade season for grass and clover seeds. The information included a statement of the prospective supplies on the Canadian, United States and British markets,

with current market values, both wholesale and retail. Canadian seed dealers, farmers' organizations and farmers received the circulars and supplied information on domestic market conditions, while the Bureau of Markets, Washington, D.C., and the Canadian Trade Commissioner, London, England, supplied information relative to seed prices, supply and demand in the United States and Great Britain respectively. This service has proven a valuable means of facilitating seed distribution to the advantage of Canadian growers and the seed trade.

SEED MARKETS EXTENSION

Effective assistance was rendered by Canadian Trade Commissioners established in seed importing countries, who supplied up-to-date lists of foreign seed houses as prospective customers for Canadian seeds. The firms whose names were obtained in this way were communicated with, their seed requirements listed and placed before Canadian exporters. This action, it is conceded, has resulted in increased export of seeds to the United States, Great Britain, France and Newfoundland. Approximately 100,000 bushels of fibre flax seed worth about a million dollars, was exported to Ireland this season. Gradually but surely the Canadian seed supply should be increased to meet the growing demand for reliable northern-grown seed.

The 1919 crop of field root and garden vegetable seeds produced in British Columbia, amounting to 150,000 pounds, was marketed through timely organization of the United Seed Growers, Limited, Penticton, B.C. The disposal of the seed was facilitated through educational and direct advertising which attracted farmers and dealers to this source of supply of commendable Canadian-grown seed.

Approximately 75,000 pounds of mangel, swede turnip and field carrot seed grown by the Experimental Farms Branch were sold at current wholesale prices to the seed trade of Canada, farmers' organizations and farmers. It was deemed advisable to confine the marketing of this seed to Canada, so that our farmers might have the great advantage of using this high-quality seed.

Circulars covering the availability and reliability of seed potato supplies in the provinces of Prince Edward Island, Nova Scotia, New Brunswick, and Quebec, were an important factor in relieving the seed potato situation in the province of Ontario, which had grave need of seed, following a poor crop last year.

HOME-GROWN *VS.* IMPORTED SEED

During the season of 1919, demonstrations were conducted on one hundred and seventeen farms in the provinces of Ontario and Quebec, the object being to determine the comparative values of mangel and swede turnip seed of Canadian production and seed of foreign origin. Home-grown seed was supplied the demonstrators in quantity to sow one-half an acre of each crop. They were required to sow seed of the same variety but of imported origin, and procured from ordinary trade channels. The seed from both sources was sown the same day, side by side in the same field and given identical cultural treatment. The farmers were required to report their observations and conclusions on the crop results, and their reports indicate that Canadian-grown seed gave in the majority of demonstrations superior crops, both as to quality and yields obtained.

SEED TESTING DIVISION.

The object of seed testing is to determine as much as possible about the crop that may result from the use of a given lot of seed. Crop yields are dependent to a considerable extent on soil and climatic conditions, but the

crop cannot be good if the seed is lacking in essential qualities. Good seed must be vital and capable of producing strong, vigorous plants; it should belong to a variety suited to the conditions under which it is to be grown; it should be free from the seeds of objectionable weeds and should not contain the spores of dangerous plant diseases. Vitality, variety, purity and freedom from disease are among the qualities of seeds which can be studied by laboratory methods.

SEED LABORATORIES.

Seed laboratories are now maintained at Ottawa, Winnipeg and Calgary. The Ottawa laboratory was established in 1902 for the immediate purpose of conducting an investigation into the condition of the seed trade. The Calgary laboratory was opened in 1907, and the one at Winnipeg in 1918. The service provided by these laboratories has proven so valuable to farmers, seedsmen, and others, that new laboratories will have to be opened as soon as competent men can be secured and trained to direct them.

NATURE OF TESTS.

Samples are listed as trade, customs, official and investigation, depending on the source from which they are received and the object for which the information is required.

Trade samples are those received from farmers, merchants, and institutions such as seed growers' associations, experiment stations, agricultural colleges, agricultural offices, and similar organizations whose object is the improvement of Canadian agriculture.

Customs samples are sent by Customs officials in connection with the importation Order in Council.

Official samples are taken by seed inspectors from lots of seed suspected of being sold in violation of the Seed Control Act. Prosecutions are based on the results of the analysis of official samples.

Many lines of investigation are carried out by the laboratory as explained below and involve the making of many thousand special or investigation tests each year.

NUMBER OF TESTS MADE.

The following table indicates the number of samples of various kinds tested during the past seed testing year and also for the portion of the present seed testing season falling within the fiscal year just closed:—

	Seed Testing Year.					
	July 1, 1918–June 30, 1919.			July 1, 1919–Mar. 31, 1920.		
	Ottawa.	Winnipeg.	Calgary.	Ottawa.	Winnipeg.	Calgary.
Trade	12,734	*9,219	9,596	10,852	4,349	7,881
Customs	2,918	...	564	1,929	845	806
Official	350	1,044	474	40	26	132
Investigation	4,697	284	946	160	530	473
Total	20,699	10,547	11,580	12,981	5,750	9,292

*Customs samples were included with trade samples last year at Winnipeg. The laboratory was opened on October 15, 1918, consequently only five and a half months are covered by these figures.

INVESTIGATIONS.

Samples of wheat, oats, barley, timothy and clovers stored in the laboratory for several years have been tested for vitality each year since they were harvested. Most of the seeds in some of the samples have now lost their vitality, but in other cases the percentage of viable seeds is still quite high. The results to date have been summarized in a paper entitled "Longevity of the Seeds of Certain of our Farm Crops," prepared by Mr. H. B. Sifton, M.A., for presentation at the annual meeting of the Association of Official Seed Analysts at St. Louis, December 29 and 30, 1919. A report of another investigation was prepared for presentation at the same meeting by Mr. J. R. Dymond, M.A., under the title "Colour Characteristics of Red Clover Seed."

Mr. J. R. Fryer, M.A., of the Calgary laboratory, continued his investigation on the effect of frost on the germination and other qualities of western cereals, particularly oats. A report of his results to date was presented at a meeting held in Saskatoon of those interested in crop production in Western Canada.

Another investigation had for its object the determination of the differences in germination of timothy and clover seed samples graded No. 1, No. 2 or No. 3, on account of the general quality of the seed. Many tests were made to determine the variations occurring when different quantities are used in making purity tests, and also to determine the variations between different parts of bags, bins and other bulk lots of seed. Investigations to discover improved methods of vitality testing or to make the results of a seed test of greater value to the sender of the sample are being carried out constantly, especially during the summer and early autumn, when the routine work of the laboratories is lightest.

EDUCATIONAL WORK.

Agricultural representatives and continuation and high schools, conducting courses in weed seed identification and seed testing, have been supplied with material for illustrating the work. There is a large and steady demand for the reference collections of one hundred kinds of economic and weed seeds, formerly put up by this branch. During the war, on account of the impossibility of securing certain essential parts entering into the manufacture of the cases, the putting up of these collections was discontinued.

There is still a considerable demand for the expensive illustrated book "Farm Weeds of Canada," which has been out of print for a number of years. Bulletin S-8 containing illustrations in black and white and much of the essential information contained in "Farm Weeds," has been in such demand that the edition is almost exhausted, and a revision of the material has been undertaken with the object of issuing a revised edition of this valuable publication.

FEEDING STUFFS.

Further investigations into the nature of feeding stuffs commonly sold in Canada for the purpose of feeding live stock, including poultry, have been carried out. Grain products, such as those of wheat, flax, oats, corn and barley, mixed, unmixed, or combined with other substances and offered for sale either under brand names, unnamed, or designated according to use, as, for instance, dairy feeds, poultry feeds, etc., have been examined in co-operation with the Experimental Farms Branch.

Microscopical examination of over four hundred representative samples of such feeds have shown only approximately five per cent to be entirely free from weed seeds. Ninety-three per cent of the samples contained either ground

or whole seeds of the Mustard family. This group includes, in addition to many forms strongly suspected of being harmful, three well-established poisonous species: Wild, Tumbling, and Worm-seed Mustard, and these were found respectively in thirty, six, and two per cent of the samples. Seeds other than the Mustards, but likewise suspected of being deleterious to stock, were found in fourteen per cent of the samples. Purple Cockle and Cow Cockle, two recognized poisonous forms, were together present in eighteen per cent of the total number of feeds examined. Moreover, vital seeds of noxious weeds, mostly of a deleterious or poisonous nature, were present in twenty-nine per cent of the feeds.

FEED EXAMINATION FOR FARMERS.

Either the refusal of a feed by stock, or the harmful or fatal consequence resultant upon feeding it has caused a number of farmers to forward samples with a request for a report on the ingredients contained. Several samples have also been forwarded by various institutions which are not in a position to make the requisite examination. During the past year nearly one hundred samples, including bran and shorts, mixed feeds, condimental concentrates, gluten and molasses feeds, as well as oil cake and dairy feeds, etc., have been received from farmers. Of these fifty-nine per cent were found to contain weed seeds know to be poisonous while fifty-seven per cent also contained seeds which are classed as deleterious. For the most part, these seeds were so finely ground that they could not be detected or identified without the use of a microscope. However, in some feeds coarsely ground seeds were found and over forty-four per cent actually contained vital weed seeds of the noxious sorts. Apart from the fact that ninety per cent of these consist of harmful species from the standpoint of nutrition, there is the further danger of spreading weeds through the seeds withstanding the digestive processes. In addition to the weed and seed content of the feeds, certain deleterious fungi have been discovered in several samples. The poisonous Ergot is especially noticeable, and a species of Aspergillus found in a particular sample seems to have been the cause of considerable loss to one farmer.

In view of the price asked for feeds the character of the ingredients comprising them has often proved surprising. Instances might be cited of refuse screenings mixed with a little molasses, tankage and bran, selling at $58 per ton, and of bran mixed with screenings selling at $60. Clover screenings containing 4,560 weed seeds of one kind per ounce have been found to comprise by far the greater portion of a so-called "Stock Tonic." Oil cake meal has been found to contain a high percentage of ground cocoa shells, while bran has been brought nearer the chemical standard for shorts by the addition of linseed meal.

FEED CONTROL.

The demand for more efficient control of feeding stuffs, especially in reference to their content of vital and deleterious weed seeds, has developed very rapidly of late years, and live stock organizations have passed several resolutions in reference to this matter. The study of feed control laws and regulations and their administration in other countries has been continued. As a result of the studies and investigations carried out, the Department is now in possession of information and the nucleus of an organization for bringing the feed trade under its inspection and control.

Seed Inspection Division.

In addition to the established work, several new lines have been organized and put into effect by the Seed Inspection Division during the past year. A

new Order in Council under the Seed Control Act was passed on September 10 last, defining grades for seed grain, sweet clover, flax and other seeds and making provision for more effective inspection. Under the powers of this Order in Council inspection of seed oats has been conducted at shipping points on the basis of the seed grade standards, and fibre flaxseed grown in Ontario and shipped to Ireland has been inspected under guarantee of quality in accordance with No. 1 seed standard. The work previously conducted by this division and continued during the past year includes the applying of importation regulations, fixing general quality standards for the various grades of clover and grass seed, grading samples submitted to the laboratories for test, inspection of the seed trade in connection with the enforcement of the Seed Control Act and the inspection of seed grain received into and shipped from Government elevators by the Seed Purchasing Commission or other dealers.

ORDER IN COUNCIL UNDER SEED CONTROL ACT.

The new Order in Council under the Seed Control Act is based on experience in connection with the enforcement of this Act during the past ten years. The system of grading as applied to clover and timothy seeds under the Seed Control Act of 1911, has proven very satisfactory from the standpoint of both the trade and the purchasing public, and numerous requests have been received to have grades defined for other kinds of seed. During the past three seasons special seed grades have been defined by Order in Council for wheat, oats and barley. These grades have been applied principally in connection with seed grain handled by the Seed Purchasing Commission and the standards have been varied somewhat from year to year. Under the Order in Council passed September 10, 1919, standards are defined for seed wheat, oats, barley and rye, flaxseed and seed corn. Provision is also made for grading the seeds of sweet clover, white clover, grasses and millet under the regulations and grade standards defined for timothy, red clover and alfalfa seed in the Seed Control Act. The Order in Council also makes some changes in the list of weed seeds which are considered noxious under the Seed Control Act and in the percentage germination standards recognized for good seed of various kinds.

INSPECTION OF SEED OATS.

For several years there has been a demand from the trade for inspection of seed grain at shipping points. The Order in Council referred to above provides the standards and necessary authority for giving this service under approved conditions. This spring there was a shortage of seed oats in Ontario and Quebec and a surplus in Prince Edward Island. Purchasers in Ontario and Quebec were anxious to secure seed oats of defined quality and under a reliable guarantee. A seed inspector was placed at the principal elevator and shipping point in Prince Edward Island who examined the oats offered at the cleaning plants and gave an opinion on whether or not they could be cleaned for seed. The oats were cleaned under inspection and if up to the seed standard they were passed and when loaded into the car a certificate was issued to the owner which was passed on to the purchaser. Very gratifying reports have been received both by shippers and purchasers in regard to this system of inspection with the request that it be continued.

FIBRE FLAX SEED INSPECTION.

With the object of maintaining and raising the reputation of Canadian grown fibre flaxseed in the Irish market, a system of inspection was applied last season which has given very satisfactory results. Nearly all of the flax growers agreed to have their stock tested and inspected by the Seed Branch before ship-

ping it to Ireland, provided that the bags containing the seed would be branded to indicate that the seed had been inspected and passed by an authorized Canadian Government official. It was agreed that certificates would be issued only for No. 1 Flax Seed which has a very high purity standard and a minimum germination of ninety per cent. When the growers had flaxseed ready to ship the Toronto office of the Seed Branch was notified and the inspector secured samples which were forwarded to the Ottawa laboratory for test. If the purity and germination of a sample were sufficiently high for No. 1 grade the inspector carefully examined the whole lot from which it was taken to see that it conformed with the sample tested, and if so the bags were sealed and marked "Grade No. 1" with the certificate number. A certificate in duplicate was issued to the grower for the lot, one of which was forwarded to the purchaser. This method of inspection was highly approved by the Department of Agriculture for Ireland and assisted materially in securing the market for Canadian seed.

GRADE FOR SEED CORN.

The Ontario Corn Growers' Association and individuals interested in growing and marketing seed corn in southwestern Ontario have, for several years, urged the passing of a regulation designed to give Canadian grown seed corn the benefit of distinction respecting place of growth when being marketed in competition with seed corn grown farther south. The Order in Council passed last September defines a standard for No. 1 seed corn and requires that any corn sold under this grade shall be marked to show the province or state in which it was grown.

SEED IMPORTATION REGULATIONS.

The seed importation regulations which were first applied in November, 1918, have continued in effect and have been very beneficial in preventing the importation of inferior seed. Foreign dealers now realize that they cannot ship seed of inferior quality to Canada and the tendency to use this country as a dumping ground has been checked. The regulations have been applied with very little inconvenience to the trade in securing delivery of imported stocks.

GRADING SEED SAMPLES.

The general quality standards for the various grades of clover and grass seed were fixed following a conference with a committee of the wholesale seed trade held in October. The general policy has been to make the standards conform as closely as possible to the actual seeding value of the seed. It is recognized that with clover and alfalfa seed particularly, the place of growth and strain of seed are of great importance as indicating hardiness, and the grade standards have been fixed to prevent as far as possible discriminating against homegrown seed which may not be as good in appearance as imported stock of southern origin.

The work of the inspection division includes grading all of the samples received at the laboratories for test. The grading is based on the purity analysis and germination test reports issued by the seed laboratories, combined with the general quality standards fixed by the inspection division. Samples for grading are compared with the standard samples of the grades. Samples of the standards on which the grades are based are distributed to the trade.

SEED INSPECTION.

The usual work in connection with the inspection of the trade for the enforcement of the Seed Control Act has been continued. This includes the

occasional inspection of stock being carried by the wholesale trade and visiting retail dealers, farmers' clubs and individual farmers who are offering seed for sale. Since the Seed Control Act came into effect there has been a continuous improvement in the quality of seed supplied through the wholesale trade. This year there has been a scarcity of clover seed, but the quality in respect to purity is probably higher than ever before in so far as the seed distributed by the wholesale trade is concerned. In the seed-growing districts there is an increasing tendency for farmers and farmers' clubs to deal in seed among themselves. As a rule these clubs and individuals are not provided with efficient cleaning machinery and seed of a lower purity standard than that supplied by the wholesale trade is handled, and as a consequence there are more violations of the Seed Control Act. The trade inspection also includes paper packet seeds. The policy has been to secure a number of representative samples early in the season. These are tested for germination and the results indicate whether any particular kinds or varieties are likely to require special attention.

ELEVATOR INSPECTION.

Inspection of seed grain at the Canadian Government elevators has been continued. This service is available to all who desire to make use of it but has been taken advantage of principally by the Seed Purchasing Commission. During the past season seed inspectors have been maintained at the Government interior terminal elevators at Calgary, Moosejaw and Saskatoon. Grain which is suitable for seed when cleaned is approved by the seed inspector and separately binned. This grain when cleaned to seed standard is sacked or loaded in bulk and the inspectors issue an ex-elevator seed certificate covering each carload. All of the seed grain purchased and sold by the Seed Purchasing Commission has been handled in this way by the Seed Inspection Division. The seed grain handled by the Seed Purchasing Commission is purchased and sold without samples or guarantee except that carried by the seed inspection certificate.

THE SEED PURCHASING COMMISSION.

The Seed Purchasing Commission discontinued its activities in Eastern Canada, but because of partial crop failure in southern Alberta and southwestern Saskatchewan it was deemed advisable to continue its services for the Prairie Provinces. The constitution of the Canadian Wheat Board, which was established in July, 1919, also contemplated the continuation of the Seed Purchasing Commission, and provided for the co-operation of the two organizations in retaining and distributing in various parts of Canada such wheat as might be necessary for the 1920 seeding.

For obvious reasons the business year of the Seed Purchasing Commission cannot be conveniently brought to a conclusion until September. The balance sheet covering the three years up to September, 1919, shows an expenditure in the purchase of grain for seed of $11,896,540.96. There has been refunded to the Receiver General, $11,903,437.76, and in addition the commission held assets, including seed grain in storage, amounting to $51,184.04.

What is more important, the commission has succeeded admirably during these difficult years in protecting agriculture in all parts of Canada against seed shortage of any kind of staple crop, and further, there has been general satisfaction regarding the quality of the seed purchased and distributed.

In co-operation with the Canadian Wheat Board the commission took delivery at the Canadian Government interior terminal elevators during the months of September, October, and November, of approximately one million bushels of wheat. All that was clean and otherwise suitable for seed was separately binned and retained for that purpose. Greater difficulties were

experienced in securing an adequate supply of good seed oats and barley, but the commission succeeded in procuring over a million bushels of seed oats of good quality, which was estimated as sufficient to meet the requirements throughout the districts that suffered severely from drouth.

There has been advanced to the commission for this year's business over three and a half million dollars, and as all sales are made subject to cash payment, all of this money will be promptly returned to the Receiver General.

In the conduct of this work the department has been fortunate in having a staff of experienced men who have been able to provide a service highly acceptable to farmers and farmers' organizations, and without incurring financial loss to the Government.

LIVE STOCK BRANCH.

Horse Division.

THE HORSE INDUSTRY.

In 1914 when war broke out the horse population of Canada was approximately 3,000,000. The population for 1919 is estimated at 3,667,000, or an increase of approximately 700,000 for the five years. The great increase in numbers has taken place in the provinces of Saskatchewan and Alberta. In 1914 in these provinces there were in round numbers 610,000 and 520,000 respectively. In 1919 the numbers have increased to 1,000,000 and 800,000 respectively.

Unfortunately much of the original stock as well as the increase were the kind for which there is no demand and not likely ever to be a remunerative market. These horses are proving to be a liability rather than an asset to the country. They are consuming feed that would bring a very considerable amount of money if fed to cattle or sheep or to horses possessing size and conformation such as the market demands. The time has come when it is necessary for the horse breeders of Canada to take stock and to weed out the scrubs and culls. The country cannot afford to feed them. From now on horsemen should raise only such horses as have a place in the economic development of the country or for which a ready foreign market may be found at remunerative prices.

During the years 1914 to 1919 inclusive Canada imported all told 5,089 pure-breds; of this number 3,120 were stallions. From Great Britain came 302 stallions and 235 mares; from European countries, 45 stallions and 15 mares, and from the United States, 2,773 stallions and 1,719 mares. It will be noticed that out of the 5,089 brought into the country 4,492 were imported from the United States. Judging from the importations Canada has a great home market of her own for pure-breds required for breeding purposes.

If the 3,120 pure-bred stallions imported during the last six years were true to type, of good conformation, sound, free from hereditary disease and possessed the size required particularly in the draught breeds, they would undoubtedly do much to improve the horse stock of the country and particularly of the western provinces into which they were taken. Unfortunately, there is good reason to believe that many of these animals lacked the characteristics which would have made them good sires. In one province in 1919 in the neighbourhood of fifty (50) stallions were examined under the federal assistance policy by the Live Stock Branch. Of this number at least half had been examined and passed the year before. Of the remainder examined for the first time that year, thirteen horses were rejected for various unsoundnesses, generally with bad conformation. Of these thirteen horses twelve were imported. As clubs usually hire the best in the district it is reasonable to estimate that a very high percentage of the imported horses are inferior specimens. This is further borne out by information received from various sources concerning the horses that are standing for service in the country. Canadian breeders cannot

afford at this time to use homebreds of poor type, much less to import poor ones for breeding purposes.

FEDERAL ASSISTANCE TO HORSE BREEDING.

During the year 1919 the policy of paying a percentage of the service fees to clubs that hired pure-bred stallions was continued. This policy is slowly but surely bringing about the results for which it was inaugurated, namely, to make the keeping of a good stallion a paying proposition to the owner and at the same time to enable clubs to obtain the services of such a stallion at a reasonable service fee. The club system is fostering community breeding. It also enables districts to stick to one breed and grade up their horse stock along definite lines.

Already in some of the districts horse sales have been held, where many of the horses offered were advertised as the colts of certain club stallions. These sales are likely to become an annual event. They will undoubtedly prove beneficial to both buyer and seller: To the buyer because he knows that he is assured of obtaining a certain number of well-bred horses of a certain size and type and to the seller through the fact that he is able to get ready sale in a co-operative way for his surplus stock, because buyers will come to the district where they are sure of getting a fair number of the class of horse required.

This policy has been the means of inducing several importers to bring in better stallions than heretofore. The careful inspection which is given all stallions hired by clubs is already proving beneficial. The weeding out of undesirables whether sound or unsound is educating the breeders to select only the best. There is also the good obtained through community breeding of a uniform type of horse. The stallion owner is also learning that the good big ones are wanted. Once the horse industry gets back to normal conditions the policy will be still more valuable and will do even more to improve the horse stock of the country.

Cattle Division.

DISTRIBUTION OF PURE-BRED BULLS.

Since 1913 the Live Stock Branch has been loaning pure-bred bulls to specially organized associations in newly settled districts and in backward sections in the older provinces. Up to the end of December, 1919, the number of bulls so loaned total 2,531.

In districts in which the department's bulls have been standing for service for several seasons, improvement in the young stock and in the stock annually marketed is to-day very noticeable. Many districts to which bulls were loaned five or six years ago have since increased their cattle holdings to such an extent that farmers have been warranted in purchasing pure-bred bulls of their own. Accordingly, each year a number of the department's sires are released by associations and are available to send on to more needy districts.

It is of interest to note that when a bull's usefulness as a sire is over he is by no means a total loss to the department. During the calendar year of 1919 the proceeds received from the sale of 426 bulls amounted to 67 per cent of their original cost as registered sires.

As a result of campaigns now under way in the different provinces to eliminate the scrub bull, it is not unlikely that the demand for the loan of bulls under the distribution policy will be greatly increased. The stimulating effect of the assistance rendered under its terms to many backward districts during the past few years justifies the belief that it may be still further extended with great profit to the cattle industry.

The following table indicates the total number of bulls purchased for each province under the distribution policy during each year of its operation, and the total cost of each year's purchases:—

TOTAL COST OF BULLS PURCHASED.

Province in which placed.	Bought 1913.	Bought 1914.	Bought 1915.	Bought 1916.	Bought 1917.	Bought 1918.	Bought 1919.	Bought Total.
British Columbia	$ 465- 3	$ 1,295- 9	$ 2,797- 21	$ 4,175- 32	$ 3,445- 22	$ 3,710- 19	$ 2,500- 13	$ 18,387- 119
Alberta	2,430-20	10,827- 78	9,917- 76	11,697- 81	12,675- 71	14,585- 67	23,170-104	85,301- 497
Saskatchewan	3,988-33	14,060-116	16,050-124	10,780- 76	12,265- 70	8,135- 43	15,755- 77	81,033- 539
Manitoba	3,100-27	3,280- 26	3,635- 28	4,965- 35	6,550- 37	6,160- 32	7,460- 35	35,150- 220
Ontario	1,090-11	4,152- 33	6,776- 53	1,930- 13	6,545- 39	5,335- 27	8,195- 40	34,023- 216
Quebec		11,742-111	19,799-170	23,512-200	21,749-165	8,335- 51	10,737- 62	95,874- 759
New Brunswick		325- 4	755- 7	915- 9	405- 3	495- 6	4,180- 35	7,075- 64
Nova Scotia		2,005- 20	2,268- 21	1,185- 13	850- 9	595- 7	1,060- 9	7,963- 79
Prince Edward Island		1,535- 15	1,635- 17	260- 3	110- 1	250- 2		3,790- 38
	$11,073-94	$49,221-412	$63,632-517	$59,419-462	$64,594-417	$47,600-254	$73,057-375	$368,596-2,531

CARLOT POLICY.

Under the terms of the carlot policy, the Live Stock Branch pays reasonable travelling expenses of a farmer residing in Canada, or the authorized agent of farmers residing in Canada, purchasing stock at central stock yards for return to country points. In Eastern Canada assistance under the policy is confined to stock yards' purchases of female breeding stock, cattle, sheep, or hogs. In Western Canada it covers stocker and feeder cattle in addition to breeding stock.

This policy has been in effect at the stock yards in Western Canada since the fall of 1916, but on the yards at Toronto and Montreal it has been effective only since May 1, 1918. There is no question that this policy has played a very important part in encouraging the return of unfinished cattle and sheep to country points for further feeding and also in the return of young female breeding stock, particularly from yards in Western Canada. In addition it has been a very valuable educational agency in that its terms have encouraged farmers from all over the country to visit the yards and to become acquainted with methods of doing business at these points.

As the following statement indicates, over 100,000 head of cattle and over 20,000 head of sheep have been shipped back to country points under the carlot policy during the last three years:—

TOTAL CAR LOT SHIPMENTS TO DECEMBER 31, 1919.

	Steers.	Heifers.	Sheep.
1916 (3 months)	6,208	3,113	1,407
1917	11,334	10,411	1,800
1918	20,703	18,745	7,978
1919	21,908	16,710	9,865
	60,153	48,979	21,050

That the policy is not an extravagant one is indicated by the fact that during the past three years the cost to the department of all cattle shipped under its terms has averaged only 59 cents per head and for all sheep only 184 cents per head.

It is estimated that at a total expenditure to date of less than $75,000, this policy has already benefited the live stock industry to the extent of approximately $4,000,000.

FREE FREIGHT POLICY.

The Free Freight policy which has been in operation since the fall of 1917, was inaugurated by the Live Stock Branch in co-operation with the railway companies of Canada with a view to preventing, as far as possible, the slaughter or exportation of useful heifers, young ewes, and young sows offered for sale on the open market at the central stock yards. Under this policy it has been possible to ship from the stock yards to country points female breeding stock of the classes mentioned without payment by the purchaser of freight charges on same provided the stock was not purchased for speculative purposes. While this policy has been in operation only slightly over two years, it has already had a tremendous influence on trading at the different yards. It has been very widely taken advantage of by farmers anxious to secure breeding stock and there is no question that it has been one of the most important factors in promoting the return to country points of practically all useful females offered on the yards at Edmonton, Calgary and Winnipeg during the past two years.

Shipments under the terms of the policy from the time of its inception, September 21, 1917, to December 31, 1919, numbered as follows:—

Ex Stock Yards.	Heifers.	Ewes.	Sows.
Edmonton	20,514	7,770	155
Calgary	18,761	25,348	
Winnipeg	17,159	7,741	195
Toronto	1,717	9,997	
Montreal	164	452	
	58,315	51,308	350

Of the above totals, shipments for the calendar year of 1919 number 25,983 heifers and 21,828 ewes.

SPECIAL RELIEF POLICY.

The serious shortage of feed existing in certain sections of the western provinces as a result of the extreme drought of the 1918 season, called for immediate assistance to needy stockmen in the dried out districts, in order to avoid the sacrifice of great numbers of live stock and the consequent enormous loss, not only to individual stock owners, but to the whole live stock industry of Western Canada. To meet this situation, what is known as the Special Relief policy was put into effect on July 23, 1918.

This policy provided for the federal department and the railway companies sharing on an equal basis the freight charges on stock shipped to feeding grounds, on haying outfits shipped to points where feed was obtainable and on feed shipments into the dry areas. The same concession applied on return shipments of stock and haying outfits. The cost of this movement to the department has amounted to approximately $465,000.

The western provinces experienced another drouth in 1919, the feed shortage being even more acute and widespread than in 1918. A relief policy, similar to the one in force the preceding season, was accordingly put into effect, on August 2. Under this policy freight charges on haying outfits and feed have been borne on an equal basis by the federal department, the provincial departments and the railways. On shipments of stock to feeding grounds the federal and provincial departments each paid one-half of the freight, except in Saskatchewan where the freight was paid by the shipper. On return shipments of stock the railways paid fifty per cent and the federal and provincial departments each paid twenty-five per cent. On shipments over the Edmonton Dunvegan and British Columbia railway and the Alberta and Great Waterways railway, the federal and Alberta departments absorbed equally all freight on haying outfits, stock, and feed shipments.

Owing to but a limited area in Manitoba having been affected by drought, the movement in that province has been comparatively small. Western Saskatchewan, however, has taken material advantage of the policy, while in Alberta shipments authorized between August 2, 1919, and March 31, 1920, include some 175,000 tons of feed, 18,000 head of cattle and 100 carloads of haying outfits

RECORD OF PERFORMANCE.

During the past year the most important development in connection with the Record of Performance, was the passing of resolutions at the annual meetings of the Ayrshire and Holstein-Freisian Associations that " a 305-day test with a

calving requirement of 400 days, be added to the Record of Performance and that the calving requirement in the 365-day test be eliminated." These resolutions have been forwarded to the Live Stock Commissioner for ratification. The 305-day test should prove of great advantage to those who wish to have their cows freshen regularly each year, whereas the 365-day open test will give the exceptionally high-producing cows every opportunity to make maximum records. The standards for qualification in the 365-day test will be considerably higher than for the 305-day test, *e.g.*, the standard of qualification for a mature Holstein cow will be as follows:—

	Lbs. milk.	Lbs. fat.
305-day test	10,500	357
365-day open test	12,000	408

Although the shortage of help on dairy farms has been only slightly alleviated during the past year, and the cost of milk production has in many instances been prohibitive, the number of cows entered for the Record of Performance test was considerably higher than in any previous year. Two thousand, one hundred and ninety-two cows were entered for the test during the year 1919-20, which is five hundred and eighty-one more than the previous year.

The following is a brief summary of the work for the year:—

Number of cows entered for the test—	
Ayrshire	752
French-Canadian	30
Guernsey	33
Holstein-Friesian	767
Jersey	455
Shorthorn	155
Total	2,192
Number of cows qualified—	
Ayrshire	176
French-Canadian	8
Holstein-Friesian	217
Jersey	96
Shorthorn	61
Total	558
Number of bulls qualified—	
Ayrshire	5
Holstein-Friesian	6
Jersey	3
Total	14

APPENDIX.

The records tabulated in the appendix to the annual report are for cows which have produced sufficient milk and butter fat to qualify, but which have failed to freshen within fifteen months after the commencement of the test.

Ayrshire	40
French Canadian	1
Guernsey	3
Holstein-Friesian	75
Jersey	25
Shorthorn	15
Total	159

Poultry Division.

The Poultry Division has endeavored to build up and organize a staff which has been and will be in a position to give to a national industry such as that of poultry rearing and the marketing of the products a supervision and an oversight comparable to that which should obtain in successful business enterprises.

In the arrangement of the work as affecting the development of the poultry industry, the idea of perfecting a business organization has been developed to the point of standardizing the product and the providing of a system of inspection by approval to insure a uniform article going forward. A comprehensive markets intelligence service has been worked out, and the mechanical part of collecting and marketing the product has been fostered through the medium of co-operative associations, through the extended instruction and demonstration in the art of candling, in the advocating of better methods of handling, more care in packing and loading, etc. The matter of economical production and costs is being approached through the policy of stock improvement, more eggs per bird, more eggs per pound of food fed, while the financial part of the programme is being followed up by a plea for greater production to make the poultry industry a real important factor in the liquidation of Canada's war debt, and the collection of statistics which will more properly correlate costs and sales prices, which accurate, definite information can be used, if necessary, as a basis for credits for the still greater expansion of the industry.

THE APPLICATION OF THE EGG REGULATIONS UNDER THE "LIVE STOCK AND LIVE STOCK PRODUCTS ACT."

The egg regulations under the "Live Stock and Live Stock Products Act" provide for the standardization of Canadian eggs and specify and define in detail the names and definitions of the various classes and grades.

Table I is a table of inspections made during the calendar year, 1919.

Table II gives a comparative summary of inspections in the western section during 1918 and 1919.

Table III is a comparative statement of export shipments by months during 1918 and 1919.

TABLE I—STATEMENT OF INSPECTIONS MADE DURING YEAR ENDING DECEMBER 31.

EASTERN SECTION.

Months.	Number inspections during month.	Number shipments not approved during month.	Number approved to date.	Number cases inspected during month.	Number cases inspected to date.
January	7		7	2,406	2,406
February					
March	22	1	28	7,640	10,046
April	29	2	55	11,141	21,187
May	52	5	102	23,298	44,485
June	34	2	134	12,418	56,903
July	27	1	160	9,070	65,973
August	32		192	9,536	75,509
September	94	7	279	40,019	115,528
October	140	12	407	59,040	174,568
November	110	12	505	41,757	216,325
December	46	2	549	13,128	229,453
	593	44	549	229,453	

TABLE I—STATEMENT OF INSPECTIONS MADE DURING YEAR ENDING DECEMBER 31.

WESTERN SECTION.

Months.	Number inspections during month.	Number shipments not approved during month.	Number approved to date.	Number cases inspected during month.	Number cases inspected to date.
January	4	2	2	1,433	1,433
February					
March					
April	61		63	26,421	27,854
May	63	3	123	27,794	55,648
June	46		169	19,201	74,849
July	57	10	216	23,271	98,120
August	18	3	231	6,414	104,534
September	18	2	247	5,890	110,424
October	33	2	278	14,257	124,681
November	19	2	295	7,383	132,064
December	12	2	305	5,341	137,405
	331	26	305	137,405	

TOTALS.

January	11	2	9	3,839	3,839
February					
March	22	1	30	7,640	11,479
April	90	2	118	37,562	49,041
May	115	8	225	51,092	100,133
June	80	2	303	31,619	131,752
July	84	11	376	32,341	164,093
August	50	3	423	15,950	180,043
September	112	9	526	45,909	225,952
October	173	14	685	73,297	299,249
November	129	14	800	49,140	348,389
December	58	4	854	18,469	366,858
Total (1919)	924	70	854	366,858	
(1918)	416	46	370	118,595	

TABLE II—COMPARATIVE SUMMARY OF INSPECTIONS WESTERN SECTION MANITOBA, SASKATCHEWAN AND ALBERTA.

	1918.	1919.
	June 1–Dec. 31, inclusive.	April 1–Dec. 31, inclusive.
Number cars inspected	173	328
Number shipped Montreal	73	74
Number shipped Toronto	43	33
Number shipped to British Columbia	19	91
Number exported direct	–	26
Number moved interprovincially between Prairie Provinces	26	76
Number not approved for shipment	12	28

The regulations became effective June 1, 1918.

TABLE III—COMPARATIVE STATEMENT EXPORT SHIPMENTS.

Month.	1918.	1919.
March	.....	7,620 cases
April	.....	8,405 "
May	.....	18,523 "
June	.....	4,995 "
July	340 cases	4,745 "
August	931 "	6,421 "
September	269 "	33,969 "
October	6,151 "	57,415 "
November	9,955 "	34,397 "
December	907 "	10,200 "
Total	18,553 cases.	186,690 cases.

Of the 186,690 cases exported, 74,376 were fresh eggs, 112,314 storage eggs. Of the fresh eggs, approximately 42 per cent were Extras, 56 per cent Firsts, 1 per cent Seconds. Of the storage eggs approximately 11 per cent were Extras, 84 per cent Firsts, and 3 per cent Seconds. Only a limited quantity of specials were exported but indications are that considerable movement of specials will take place during the ensuing year.

Owing to the fact that the railways and transportation companies insist, as required by law, that certificates of inspection be available for attachment to bills of lading, very few violations of the regulations have occurred. So far, in each instance where legal proceedings were necessary, definite convictions have been secured.

All inspection is by approval at point of shipment. This method of inspection has commended itself highly to the British importer and it is to the efficiency of the system, the methods followed, and the ability of the inspectors employed, that Canadian eggs have this year received such a distinct premium over the product of competitive countries on the British market.

At present the regulations apply mainly to export shipments. The intention is to so amend the regulations as to embrace a much larger proportion of eggs marketed within the country than is at present the case. It is also proposed to ask for the approval of regulations covering the standardization, marking and inspection of market poultry along lines similar to that followed in the egg regulations.

EGG AND POULTRY MARKETS REPORTING.

This work has advanced during the past year and what objections had been previously raised in connection with producers and shippers, in the western provinces not receiving the market information in time to be of the greatest advantage to them, have been met by the issuing of the Tri-weekly Reports from Edmonton for British Columbia and Alberta, and from Winnipeg for Manitoba and Saskatchewan.

Requests for Weekly Egg and Poultry Markets Reports are received daily, and the issuing of this report now entails the printing of over twenty thousand sheets weekly. The Daily Market Wire issued from Ottawa is also increasing in circulation, and those buyers who may still attempt to obtain supplies at prices calculated to be sufficient to meet the demands of producers ignorant of market conditions, now find they have to deal with people in possession of up-to-the-minute market information. This is resulting in placing the whole buying and selling end of the poultry industry on a fairer and more businesslike basis.

During the past year permanent correspondents have been secured in Great Britain, and at the present time the Live Stock Branch is probably the only institution in Canada receiving cable advices on egg and poultry prices in Great Britain all the year round. This cable intelligence system has been of inestimable benefit to all handlers of eggs and poultry.

At the Poultry Conference held in Ottawa March 18 and 19, the newly formed Canadian National Poultry Association passed a resolution which read in part as follows:—

> Whereas the reports of egg and poultry markets at present compiled and distributed by the Live Stock Branch of the Dominion Department of Agriculture have proved to be of inestimable benefit to producing and distributing Canadian poultry interests,
>
> Be it resolved that we express to the Live Stock Branch of the Dominion Department of Agriculture our sincere appreciation of such reports and pledge our association's co-operation in the further extension of this work.

It would seem desirable at this time to make what arrangements may be necessary to reach a greater number of those interested in the poultry industry. This would be a very difficult matter under the present system of distribution, but negotiations are now under way and it is hoped in the near future to have egg and poultry daily reports distributed to all parts of Canada through the Canadian Associated Press.

CO-OPERATIVE MARKETING AND GENERAL PROPAGANDA.

The past year has seen greater progress in co-operative marketing of eggs and poultry than any previous year. In Prince Edward Island the experimental stage and the stage of active departmental assistance has passed. The association stands on its own feet and is now a distinct, concrete demonstration of departmental activity in this connection. While general assistance in the way of encouraging more people to become co-operators is being given, departmental officers in that field are directing their work more along propagandic lines and the assisting of producers by means of better culture and improved methods to realize the financial advantages accruing through co-operative effort.

In New Brunswick and Nova Scotia the foundation is being laid. Arrangements are being made to link up co-operative sale in those provinces with the Sales Department of the Island Co-operative, and this fall a striking demonstration of the usefulness of co-operation has been brought home to producers through the medium of market poultry fairs, at one of which producers disposed of in the neighbourhood of eight (8) tons of chickens and turkeys.

A district poultry promoter has also been appointed in the province of Quebec. From reports at hand, it would appear that creameries in the province of Quebec can be utilized as a very important collecting medium, especially in those districts where egg circles are not now in existence or where the volume of product available is not sufficient to warrant the employment of a special collector. Many of the creameries in Quebec are now affiliated with one or other of the large co-operative sales organizations in Quebec.

In Ontario, after some changes and readjustments in the staff, the work has been established on a more secure footing and indications are that at an early date an important union of existing centralized bodies will take place. One co-operative body, namely, the Dundas Co-operative, shipped upwards of fifteen (15) cars of eggs for export last year. The United Farmers, Limited, of Ontario, have also arranged to include an egg and poultry department in the commercial end of their organization.

In no province has more rapid progress in co-operative marketing occurred than in British Columbia, where during the past year a centralized association, known as the British Columbia Poultrymen's Union, has been organized and has engaged in active business operation since last July.

The following extract from a letter from the secretary of the United Farmers of Alberta pays a useful tribute to the work in Alberta:—

> "The executive of the United Farmers of Alberta have instructed me to write expressing appreciation of the excellent work being done in this province by the representatives of the Dominion Poultry Branch. Having seen some of the practical work being done by the Dominion poultry representatives in Alberta, and knowing that their work is highly valued and in great demand, especially among local associations of the United Farmers of Alberta, our executive believes that no more practical work for the immediate benefit of agriculture could be done by the department than by the prompt addition of two or three more good men to the staff already employed in this province."

RECORD OF PERFORMANCE FOR POULTRY.

The Record of Performance for poultry is a policy planned to give point, direction and encouragement to the breeding of poultry along lines of greatly increased individual and flock production. This policy provides for systematic, periodic inspection of all flocks accepted for entry in the Record of Performance and provides for the issuing of a certificate of merit for each individual bird which produces 150 or more eggs in 52 consecutive weeks. Provision is also made for an advanced Record of Performance for each bird which produces 225 eggs in 52 consecutive weeks. The eggs of each bird must average 24 ounces to the dozen or over during the period of the test.

This policy was launched in July last, and the first entries received and records commenced October 1. The following table gives particulars in detail of the number of birds entered, and the districts from which they come:—

TABLE IV—PARTICULARS OF BIRDS ENTERED IN RECORD OF PERFORMANCE FOR POULTRY.

Province.	S.C.W. Leghorns.	W. Wyandottes.	B.P. Rocks.	R.I. Reds.	Other Varieties.	Total.
British Columbia	1,490	135	–	–	–	1,625
Prairie Provinces	143	5	25	40	10	223
Ontario	381	279	281	76	79	1,096
Quebec	106	–	414	219	31	770
Nova Scotia	6	4	–	60	–	70
New Brunswick	90	20	70	–	–	180
Prince Edward Island	55	74	117	–	–	246
Totals	2,271	517	907	395	120	Grand Total... 4,210

Particularly encouraging is the entry from the Maritime Provinces, where, previous to the launching of this policy, very few poultry were trap-nested except those on the Experimental Farms.

Indications are that another year, when the benefits accruing from, and the purpose of the policy, become better known, the entries will be greatly increased. At a meeting of the Canadian National Poultry Association held in Ottawa in March last, arrangements were made for incorporation of the association under the "Live Stock Pedigree Act", by which action it will be possible to

provide for a Canadian National Poultry Record under the jurisdiction of the National Records Board. The requirements for registration are of especial interest. In addition to the ordinary requirements as to purity of breeding, it is to be required that all females must have qualified in the Record of Performance for poultry before being eligible for registration.

EXHIBITS.

As in past years the different aspects of the work carried on by the Poultry Division have been featured at every large exhibition in Canada through the medium of exhibits. The main exhibit sent out last year featured "Increased Consumption," "Canadian Standards for Eggs," "The Egg Regulations under the 'Live Stock and Live Stock Products Act'," "Co-operative Marketing," and "Flock Improvement." This exhibit toured all the larger exhibitions from coast to coast. In addition, three smaller exhibits were also kept continually moving from place to place, and these have done a very useful and necessary work. They have been favourably commented upon by exhibition authorities and by visitors at the exhibitions. As an indication of the demand there is for these exhibits, it may be pointed out that fair associations are now applying for them several months in advance. Last year it was not possible to meet all the requests made for exhibits.

Markets Intelligence Division.

MARKETS NEWS SERVICE.—STOCK YARDS SERVICE.

Through the Markets Intelligence Division of the Live Stock Branch is administered the live stock markets policy, the objectives of which are: to remove as far as possible all conditions detrimental to the marketing of live stock as regards transportation, stock yards accommodation, and the actual transaction of business on public stock yards; to so familiarize producers and feeders of live stock with actual market conditions, and trade requirements, as to bring about more intelligent breeding and feeding in the production of market classes of live animals, and to provide a source of intelligence with regard to local, general, and world's live stock production, such as will form a sound basis for local production and give direction to general live stock development in the Dominion.

In pursuance of the policy as outlined, officers of the branch located at the central stock yards at Montreal, Toronto, Winnipeg, Calgary, and Edmonton again undertook the classifying, grading and pricing of all live stock offered for sale, obtained detailed information as to the origin and disposition of the stock and data on all other phases of trading on public stock yards, throughout the year. The information obtained by the officers was mailed or telegraphed to the Live Stock Branch at Ottawa to be recorded, co-ordinated and, in part, used as a basis of a weekly market news letter to the farm press and to a selected mailing list, the personnel of which is directly interested in the promotion of the live stock industry.

The weekly markets news service was continued and consisted of tables of statistics showing the number, average price, price range for the bulk of sales, top prices, dispositions and comparative receipts of all live stock sold on the different stock yards, together with comments in detail covering marketing conditions. In addition to supplying the reports to the regular mailing list, copies were also distributed to the members of the House of Commons. These weekly reports were again followed by monthly statistical statements.

News articles, memoranda and general information with regard to markets and the live stock industry in general, were supplied to the farm press, producers,

trade, and officers of the Department of Agriculture; also the compilation of statistics, and the gathering of information, covering the live stock industry in the British Empire and foreign countries were continued.

A record of the point of origin of the classes and grades of live stock slaughtered, returned to country points or exported, was compiled by counties in the eastern provinces and by divisions in the western provinces, so that a very intimate knowledge as to the condition of live stock marketing in the various provinces is now available covering the period from January, 1917, to March 31, 1920.

The officers at the yards again rendered every assistance possible to purchasers of live stock under the carlot and Free Freight policies of the branch, an outline of which will be found under the report of the Cattle Division, and placed their services and offices at the disposal of all those requiring assistance in purchasing and shipping live stock.

It is conceded that the work of the officers at the yards contributed much toward the improvement of western market cattle during the past three years, as well as being instrumental in facilitating the movement of stock, particularly from the drought areas of Alberta and Saskatchewan during the fall of 1919.

NEW WORK UNDERTAKEN DURING THE YEAR.

The most important phases of the new work undertaken through the Markets Division were the inauguration of a Daily Markets Telegraph Service, an Inter-Stock Yards Telegraph Service, the distribution through the press of weekly notes on domestic and world's live stock production and the enforcement of the rules and regulations governing the operations of stock yards, as prescribed under the Live Stock and Live Stock Products Act, 1917.

The Daily Markets Telegraph Service consisted of detailed telegraph reports on the market operations at stock yards as supplied by officers of the branch, located at the yards. These reports were assembled at 11 a.m. and 4 p.m. daily, and distributed to the morning and evening press of Canada over the wires of the Canadian Press, Limited. This service is now used by practically every evening and morning paper in Canada and is recognized as standard, true, and reliable data on market transactions.

The Inter-Stock Yards Telegraph Service, inaugurated during the year, consisted of an exchange of market telegrams between officers of the branch at the various stock yards. These telegrams outlined trade conditions on the markets as soon as the day's trading was established. The telegrams when received at each yard were posted on bulletin boards so that all interested might have accurate information as to the live stock market situation at other Canadian yards, and through the intelligence obtained operate with more certainty and better direction than formerly. Daily papers printed and published at the leading live stock centres carry extensive information on the local live stock markets, and during the year officers at the yards supplied such newspapers with a large amount of special material, including the movement of stock on export and interprovincial account, from the local yards. The complete service placed live stock markets intelligence within the reach of almost every producer and feeder in the Dominion.

The Live Stock Commissioner, through the Markets Division, supplied the farm press and the regular mailing list with weekly news letters containing timely information on current conditions in domestic and foreign live stock circles.

A census of the status of the live stock industry in Canada on August 1, 1919, was made by the division through a questionnaire sent out to a list of 3,300 drovers and the information obtained therefrom made public from time to time.

The first annual official review of the live stock market situation in Canada was prepared by the division and distributed through the farm press of Canada.

An initial move has been made to obtain better live stock railroad transportation service and the officer at Montreal has already been successful in obtaining satisfactory service for shipping points hitherto handicapped by inadequate service.

The Relief Tariff (as outlined under the report of the Cattle Division) was supervised by officers of the Markets Division, who represented the Live Stock Branch and undertook all the detail in connection with the administration of the tariff.

THE LIVE STOCK AND LIVE STOCK PRODUCTS ACT.

Under the provisions of section 9, subsections (*a*) and (*b*) of the Live Stock and Live Stock Products Act, 1917, all stock yards in Canada came under federal control during August, 1919. Since that date the construction, equipment, maintenance and operation of stock yards have been subject to the approval of the Minister of Agriculture. As required under the Act, all commission men are becoming members of a live stock exchange and are furnishing a bond as evidence of good faith. The by-laws and schedule of handling charges of the various live stock exchanges have also been submitted to the department for approval, as required.

Under the direction of the Supervisor of Stock Yards, the markets officers are charged with the work entailed in the application of the requirements under the Act. Noticeable improvements were made during the year at the various stock yards in regard to service and accommodation and there seems to exist a willingness on the part of all concerned that augurs well for the promotion of the live stock industry in this direction.

The importance of the work undertaken by the Minister of Agriculture through the Markets Intelligence Division is made manifest in the following statement:—

The live stock which came under the supervision of the officers of the branch during the year was in excess of 2,800,000 head, and was valued at over $200,000,000.

Of the total marketings, in excess of 500,000 head of live cattle, valued at approximately $50,000,000, were exported to United States markets, and approximately 190,000 stocker and feeder cattle were returned from Canadian stock yards to country points; the conservation of live stock as indicated by the latter movement, was effected largely through the Carlot and Free Freight policies of the department, which are administered by the Live Stock Branch through the stock yards officers.

4.—COMPARATIVE GRADING OF LIVE STOCK WITH COMPARATIVE PERCENTAGES OF TOTAL NUMBER OF EACH CLASS MARKETED AT CANADIAN STOCKYARDS DURING CALENDAR YEARS 1918 AND 1919.

Classification.	Number 1919.	Number 1918.	Per cent. Class 1918.	Per cent. Class 1918.
Steers—Heavy finished	22,712	21,053	2·26	2·58
Steers—1,000-1,200—				
Good	80,314	75,681	8·00	9·30
Common	20,698	30,063	2·06	3·70
Steers—700-1,000—				
Good	69,363	70,418	6·90	8·66
Common	53,950	50,634	5·38	6·22
Heifers—				
Good	65,283	38,489	6·50	4·73
Fair	34,743	26,440	3·46	3·25
Common	25,719	15,351	2·56	1·90
Cows—				
Good	77,520	75,904	7·72	9·33
Common	109,745	85,729	10·93	10·55
Bulls—				
Good	9,479	8,959	0·95	1·10
Common	31,133	27,674	3·10	3·40
Canners and Cutters	87,028	57,095	8·67	70·2
Oxen	5,158	6,709	0·52	0·82
Calves—				
Veal	226,002	178,605	90·76	93·44
Grass	23,015	13,532	9·24	6·56
Stockers—450-800—				
Good	93,705	98,978	9·33	12·17
Fair	58,855	64,675	5·86	79·5
Feeders—800-1,100—				
Good	100,816	33,754	10·04	4·15
Fair	57,855	25,827	5 76	3·17
Hogs (fed and watered)—				
Selects	729,483	803,622	87,27	86 65
Heavies	11,632	18,449	1·39	1·99
Lights	56,883	69,403	6·79	7·48
Sows	27,726	30,458	3·32	3·29
Stags	10,216	5,532	1·23	0·59
Lambs—				
Good	293,656	183,918	58·33	56·67
Common	72,220	52,326	14·35	16·12
Sheep—				
Heavy	4,333	5,108	0·86	1·58
Light	81,543	46,439	16·20	14·30
Common	51,633	36,755	10·26	11·33

NOTE:—All stock included in above was sold over the scales.

SHEEP AND GOAT DIVISION.

The policy of loaning pure-bred rams and boars to farmers' live stock associations is still in operation, although during the past year it was confined to districts where it was felt that necessity warranted expenditure for this particular phase of the work. Through the introduction of sires in such districts the market value of lambs has been increased in some cases as much as fifty per cent and effective improvement in the quality of hogs has also been accomplished.

To date a total of 1,813 rams and 498 boars have been loaned under this policy; 506 rams and 89 boars are at present in service.

THE PREMIUM POLICY FOR PURE-BRED RAMS

The Premium policy for pure-bred rams was inaugurated for the first time this year and 674 applications have been received up to date. This policy is

proving a great stimulus to the use of the pure-bred sire and has done much already to discourage the use of the scrub ram. Under this policy two annual payments of five dollars each are made to any sheep owner with a ewe flock of ten or more who purchases a pure-bred ram for the first time. The following is a statement of the applications received under this policy by provinces:—

Prince Edward Island	44
Nova Scotia	50
New Brunswick	99
Quebec	283
Ontario	135
Manitoba	14
Saskatchewan	15
Alberta	27
British Columbia	7
Total	674

CO-OPERATIVE GRADING OF WOOL

During the year 3,788,138 pounds of wool were graded for farmers' co-operative organizations by graders of the Live Stock Branch. This amount includes wool from all the provinces. The grading of wool has had a wonderful effect in improving the quality and preparation of Canadian wool for market. Graded Canadian wool is now acceptable to the wool trade of Canada and a keen demand exists for our wool in the United States. As a result of grading, Canadian wools are able to compete successfully in a wider market than heretofore and Canadian sheep raisers have received the highest market price offered for the grades of wool produced. This has given greater stability to the sheep industry and accounts in a measure at least for the steady increase of the sheep population during the last few years.

The following is a statement of the grading by provinces for the year:—

WOOL GRADING STATEMENT FOR 1919.

Grades.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
Fine staple					270	520	24,320	126,447	7,651
Fine clothing					250	7,120	22,911	142,865	6,777
Fine medium staple				164	7,126	26,465	105,347	357,158	9,493
Fine medium clothing				204	7,176	25,973	65,257	110,233	4,333
Medium staple	16,291	66,778	24,550	79,384	207,770	64,933	235,871	361,072	19,727
Medium clothing				7,070	17,312	22,842	50,908	60,335	8,301
Lower medium staple	31,277	35,715	28,127	71,077	259,125	76,649	157,128	182,951	29,575
Lower medium clothing						2,813	663	1,771	341
Low staple	9,244	1,156	1,092	10,565	92,199	22,318	26,875	23,862	3,250
Low clothing					123	21		52	
Coarse	5,098	735	334	6,406	118,501	6,410	8,046	12,108	137
Burry and seedy		154			13,556	7,253	21,422	12,128	1,210
Cotts	326	437	230		23,199	4,930	1,226	3,550	1,201
Dead		4			4,580	1,683	3,558	10,409	820
Murrain							349	1,126	
Black and gray	645	1,500	842	1,398	3,795	4,968	3,872	8,587	407
Damaged and pulled		171				240		280	51
Bucks								1,831	
Tags	504	1,155	638	2,413	18,659	9,427	15,120	19,467	2,724
Sweepings						280	212	1,196	
Sisal and kempy						3,603	114	2,820	
Mohair				151		115	218	1,358	7
Locks, pieces							54	38	
Tubwashed, washed, ungraded and miscellaneous		1,435		99	6,738		91	20,517	168
Rejects	271	1,137	27	8,496					
Total	63,656	110,377	55,840	187,427	780,379	288,563	743,562	1,462,161	96,173

EDUCATIONAL AND DEMONSTRATIONAL PROPAGANDA WORK

During the year exhibits were sent to most of the leading exhibitions throughout Canada. The transient exhibit which visited the ten western fairs showed the grades of wool, processes of manufacture of both wool and mohair and contained a full line of shepherd's supplies as well as samples of the best feeds for sheep.

At eastern fairs the exhibits were of a very practical and demonstrational nature. Besides illustrating proper methods of sheep management and preparation of wool for market, actual demonstrations were given on shearing, preparing fleeces, grading of wool and dipping. A refrigerator displaying cuts of finished and unfinished lamb carcasses was also displayed with a view of encouraging the finishing of lambs for market.

Stationary wool exhibits have been supplied to the different agricultural colleges for use in connection with courses on wool instruction. A wool exhibit has also been placed in the Commercial and Industrial Museum, Montreal, and a large number of samples of wool grades have been sent to schools. The exhibits have been a very effective and far-reaching means of giving sheep raisers the latest knowledge on sheep raising.

Aside from exhibit work, representatives of the Sheep and Goat Division have carried on a large amount of demonstration work. Co-operative dipping has been instituted in several of the provinces, and demonstration work carried out in this connection now has as its ultimate object, where possible, the adoption of this practice. Demonstrations in the docking and castration of lambs were also concentrated in districts, where, as a result of demonstrations one or more carloads of lambs could be marketed co-operatively, thus giving farmers an opportunity to measure the value of docking and castrating in dollars and cents. As a result of such demonstrations 2,600 lambs were marketed from New Brunswick on the Montreal market at a gain of two to three cents a pound and owing to the large number of wether lambs which these shipments contained they topped the market during the weeks of their arrival on the market. During the winter urgent requests were filed from the Maritime Provinces requesting the branch to extend the activities in order that all the people might benefit. Arrangements were made to place men in the three provinces and similar work will be undertaken.

THE GOAT INDUSTRY.

Owing to repeated outbreaks of foot and mouth disease in Great Britain, it was impossible to make an importation of male goats of the milking breeds for distribution to the goat associations throughout the Dominion. Interest continues to grow in favour of the goat, especially in suburban districts, and many inquiries have come to hand asking for information of the feeding, care and management of goats. The greatest need in the goat industry at the present time is more breeding stock to meet the demands of those wishing to purchase milking does of the recognized breeds.

SWINE PROPAGANDA

In addition to the distribution of pure-bred boars under the distribution policy, a large amount of information has been disseminated in regard to the feeding and management of swine. In view of the very high price of mill feeds and rough grains and the relatively low price of pork, it has been very difficult for farmers to feed and fatten hogs at a profit, and the greatest economy in use of feeds had to be practised by utilizing all cheap by-products about the farm and exercising skill in balancing rations to obtain the best feeding results.

Feed Division

The activities of the Feed Division during the last fiscal year have been confined chiefly to the purchase and distribution of standard stock feed, 24,500 tons, 800 pounds of this product have been distributed since the inauguration of the Feed Division in 1917.

Distribution during the early part of the fiscal year was confined wholly to disposing of the balance on hand. Particulars of the distribution are shown in the attached table.

As a result of repeated requests for the department to continue to distribute standard stock feed, a conference was held in Winnipeg early in November with a view to interesting farmers' co-operative organizations in this feed and if possible to arrange for the distribution of it through that medium. As a result of this conference the eastern organizations (United Farmers of Ontario and the Comptoir Co-Operative de Montreal) contracted with the elevator companies for 3,000 tons and the department itself agreed to distribute 500 additional tons amongst the three western provinces. At the conference the attitude of the western delegates was such as to indicate that western feeders were not interested and the 500 tons mentioned were reserved more or less to take care of future demands. A further conference was held in December with a view to obtaining additional supplies but in light of the peculiar wheat situation it was felt that little or no wheat would pass through the Fort William elevators with a result that no screenings would accumulate at that point.

At the commencement of the fiscal year the division had in store in Montreal some 1,400 tons of linseed oil-cake for which no market could be found in Canada. This was disposed of to United States interests for export to Holland. It was felt that this course was to be preferred rather than continue to pay high storage charges, with little or no prospect of making sales within the Dominion.

In addition to the foregoing some 21,894 bushels and 12 pounds corn for feeding purposes have been distributed throughout the Dominion.

SCREENINGS, 1919.

Four Western Provinces.	Ontario.	Quebec.	New Brunswick.	Nova Scotia.	P.E.I.	Total.
Tonnage sold 2,772 tons, 1,860 lbs.	Tonnage sold 4,882 –1,190 lbs.	Tonnage sold 2,426 –1,790 lbs.	Tonnage 91 tons	Tonnage 206 tons	Tonnage 58 tons	Tonnage 10,437 tons, 840 lbs.
Cost $ 102,080 01	Cost $ 192,523 77	Cost $ 94,299 27	Cost $ 3,468 00	Cost $ 8,643 00	Cost $ 2,296 50	Cost $ 403,310 55
Receipts $ 73,510 48	Receipts $ 135,212 92	Receipts $ 68,089 27	Receipts $ 2,450 00	Receipts $ 6,105 00	Receipts $ 1,675 00	Receipts $ 287,042 67
Loss $ 28,569 53	Loss $ 57,310 85	Loss $ 26,210 00	Loss $ 1,018 00	Loss $ 2,538 00	Loss $ 621 50	Loss $ 116,267 88

DOMINION EXPERIMENTAL FARMS AND STATIONS.

With the close of the war, it has been possible to discontinue some of the special lines of effort of this branch. Others have been placed upon a more far-reaching basis of research and experiment, having in view a return to the study of those principles of agriculture upon the practice of which depends the continued productivity of our soils, so vitally necessary in this period of reconstruction.

Notwithstanding many drawbacks such as depletion of staff and shortness of labour supply, the year has been one of considerable progress.

Additions have been made to several of the Branch Farms and Stations, permitting of wider experimental work.

Some much needed buildings have been erected, though in this regard much yet remains to be done before the delay in the building programme caused by the war may be said to have been overcome.

A much needed modern dairy building was commenced at the Central Farm late in the winter. This will afford space not only for the demonstration of up-to-date dairy methods but also laboratory accommodation for the study of those bacteriological problems connected with the production of pure milk.

Preparations have been made for wider work with horses, cattle and sheep, involving several new and important lines of investigation; an excellent foundation herd of pure-bred Guernseys has been established at Nappan, N.S., and the herds at Ottawa have been strengthened by the addition of some excellent Ayrshires and Holsteins. Arrangements have been made for carrying on extensive work in the breeding of French-Canadian horses at St. Joachim, Que., under the immediate supervision of the superintendent of the Cap Rouge Station; on several other Stations, east and west, breeding work with Clydes and Percherons has been commenced or widened. At Lethbridge and Lacombe, in Alberta, extensive work in sheep raising under range conditions has been put under way.

With poultry, the scope of the work has increased many fold, and it has been found possible to devote more attention to the problems underlying successful poultry keeping, such as pedigree breeding, disease investigation and the chemical researches connected with eggs, incubation, feeding, etc.

The extension work, comprising exhibits, distribution of egg and poultry account forms, inspection and survey work, etc., has been actively carried on and the egg-laying contests have increased in number from two last year to seven this year.

The Illustration Station work has been increased by the establishment of a number of new Stations in the province of Quebec and the selection of ten Stations in Nova Scotia and New Brunswick, which will be in operation in 1920.

The Division of Fibre Plants has made marked progress in demonstrating the possibilities of flax fibre production and manufacture in Canada, while the Tobacco Division, as a result of years of investigation and experiment, by means of its improved and acclimatized varieties, placed the tobacco growers in a position to profit by the high prices for tobacco which obtained this year.

The Division of Forage Plants, relieved of its emergency duty, during the war, of producing a large proportion of the root seed required in Canada, has now turned its attention to the improvement of the varieties of field-roots and to the continuation of its work in grass and clover breeding.

The Division of Horticulture, although hampered by lack of staff, has preparations well under way for wider work in the utilization of garden products by canning, drying, etc., and most of the necessary equipment therefor has been ordered.

The Cereal Division in addition to a heavy programme of plot and breeding work has just finished a limited distribution of a new hulless oat—the Liberty—which, for special uses, bids fair to achieve popularity and success.

The plant pathologists and inspectors of the Division of Botany continued to do excellent work in the study of plant diseases, the demonstration of methods of disease prevention, especially with potatoes, inspection and certification of seed potatoes, and, in the West, especially, the study of cereal diseases.

In the other divisions, work has progressed steadily along established lines. The Division of Chemistry, which, during the war, carried a heavy burden of war work and investigation in addition to continuing in its own proper field of research as well as might be, has had to contend, both during the war and since, with shortage of staff and many changes therein. This indeed has been the case to a notable extent throughout the whole branch, and, from all indications, is likely so to continue for some time to come.

While some of the smaller fairs were not held during the past year, the Division of Extension and Publicity was kept busy, and put up excellent displays at the large exhibitions. An exhibit was also sent in charge of the chief officer of the division, to Lyons, France, and was afterwards on display for a considerable time in Paris.

It was found impossible, owing to the branch being so short-handed, to devote as great an amount of time as was desired to the preparation of material for press. However, the following publications were issued during the year:—

The Annual Report of the Experimental Farms for 1918-19.

In the Regular Series of Bulletins—

No. 93. Preservation of Fruits and Vegetables for Home use.

No. 94. Bush Fruits.

In the Second Series—

No. 40. Use of Coarse Grains as Human Food.

No. 41. Summary of 3 Years' Experiments on the Harrow Tobacco Station.

No. 42. Wild Rice.

In Pamphlets—

No. 28. The Rod Cultivator.

In Circulars—

No. 17. Every Gardener his own Seed Grower, Part II. Three issues of Seasonable Hints were also prepared and distributed and 152 articles sent to the Canadian press from April 1, 1919, to March 31, 1920.

At the close of the year, the data are complete for several excellent bulletins which it is hoped may be got ready for print during the coming year.

NOTES ON THE SEASON.

The season of 1919 opened late in both East and West. Very little seeding had been done in the East by the end of April, and in the West about forty per cent of the land remained to be sown on May 1. Growing conditions in the East, however, were favourable and fair crops resulted while in the West continued dry weather resulted in material reduction of yields, in some sections amounting to crop failure.

The average yield of wheat per acre for all Canada was ten bushels, as compared with eleven in 1918. Oats and barley also gave lower per acre returns. Hay and fodder corn and potatoes gave higher average yields than in the previous year.

At average prices, the total value of all field crops in the Dominion, in 1919, is estimated at $1,452,437,500, as compared with a total value of $1,372,935,970 in 1918.

The increase in acreage sown and the value of crops produced is the highest on record.

In the following tables some details will be found as to yield and value of the principal field crops in 1919. The numbers of the various classes of live stock during the period 1914-19 are also given.

AREAS AND ESTIMATES OF YIELD AND VALUE OF FIELD CROPS, 1919.

Crop.	Area.	Yield per Acre.	Total Yield.	Weight per measured bushel.	Average price per bushel.	Total Value.
	Acres	Bushels	Bushels	Lbs.	$	$
Fall wheat	672,793	23·75	16,006,000	61·20	1 97	31,521,000
Spring wheat	18,453,175	9·50	177,254,400	58·53	1 88	333,336,000
All wheat	19,125,968	10·00	193,260,400	59·12	1 89	364,857,000
Oats	14,952,114	26·25	394,387,000	34·16	0 80	317,097,000
Barley	2,645,509	21·25	56,389,400	46·32	1 37	77,462,700
Rye	753,081	13·50	10,207,400	55·09	1 40	14,240,000
Peas	230,351	14·75	3,406,300	59·60	2 86	9,739,300
Beans	83,577	16·50	1,388,600	59·99	4 48	6,214,800
Buckwheat	444,732	23·50	10,550,800	47·23	1 50	15,831,000
Mixed grains	901,612	31·00	27,851,700	44·83	1 36	37,775,400
Flax	1,093,115	5·00	5,472,800	55·14	4 13	22,609,500
Corn for husking	264,607	64·00	16,940,500		1 30	22,080,000
Potatoes	818,767	153·50	125,574,900		0 95	118,894,200
Turnips, mangels, etc	317,296	354·00	112,288,600		0 50	54,958,700
		Tons	Tons		Per ton	
Hay and clover	10,595,383	1·55	16,348,000		20·72	338,713,200
Fodder, corn	511,769	9·75	4,942,760		6 92	34,179,500
Sugar beets	24,500	9·80	240,000		10 86	2,606,000
Alfalfa	226,869	2·20	494,200		21 85	10,800,200

NUMBER OF FARM LIVE STOCK IN THE DOMINION, 1915-1919.

Live Stock.	1915.	1916.	1917.	1918.	1919.
Horses	2,996,009	3,258,342	3,412,749	3,609,257	3,667,369
Milch cows	2,666,846	2,833,433	3,202,283	3,538,600	3,548,437
Other cattle	3,399,155	3,760,718	4,718,657	6,507,267	6,536,574
Sheep	2,038,662	2,022,941	2,369,358	3,052,748	3,421,958
Swine	3,111,900	3,474,840	3,619,382	4,289,682	4,040,070

Division of Animal Husbandry.

During the past fiscal year the work of the Animal Husbandry Division of the Experimental Farms has been carried on successfully. The promotion during the early part of the year of the Dominion Animal Husbandman to the position of Director of Experimental Farms has meant considerable readjustment within the division, and the ever-increasing routine work, correspondence, and travel devolving upon the junior members of the staff has necessitated the postponement of certain contemplated lines of experimental work and prevented the completion of publications in course of preparation.

LIVE STOCK AT THE CENTRAL FARM.

Horses.—The recognized excellence of the stable of horses maintained at the Central Experimental Farm has been well maintained. With the exception of those used for driving and express work, the horses are of draught type and these have been kept busily employed.

An important addition was made to the stock of registered Clydesdales by the purchase of two mares, well known in the Canadian Clydesdale show rings

and considered by breeders as among the best individuals in America. These with the home-bred mares, stallions and colts make a most creditable showing. To assist horse-breeding operations two young stallions of excellent type and breeding, bred at the Central Farm, were shipped to Branch Farms in the Maritime Provinces.

In the first appearance of Central Experimental Farm stock in the show rings, the horse entries were singularly successful and it is safe to say that in this particular line of breeding work, this division enjoys the respect of the majority of prominent Clydesdale breeders in Canada.

Considerable success has been attained in the rearing of foals, due in part to the careful application of measures preventive of some of the serious ills incidental to foaling and the early life of the colt. As in the past, data have been collected as to costs of rearing, maintenance, the cost of horse-power, etc., both at the Central and Branch Farms.

Beef Cattle.—Owing to scarcity of roughage in the form of clover hay and ensilage and the prospective difficulty of purchasing or substituting for these feeds, in addition to the fact that other uses appeared advisable for the feeding sheds—no steer-feeding was carried on.

Dairy Cattle.—As during the previous year, four breeds of dairy cattle have been maintained, Holstein, Ayrshire, Jersey and French Canadian. Both official and semi-official test work has been carried on extensively and a large number of creditably high records made.

Besides the data accumulated on cost of rearing of animals, costs of production of milk and milk products, much testing of equipment and accessories has been carried on. At the present time nine different makes of milking machine are on hand and are being studied in so far as is possible. With the provision of facilities for bacteriological work, a long-felt want will be filled in connection with this most important line of investigation.

The increased demand for pure-bred bulls has been an encouraging sign. As in the past, many young, tested bulls have been sold at very moderate prices to private individuals and to breeding societies

The Dairy.—From the strictly investigational or experimental standpoint, lack of accommodation has largely prevented much work being done. The definite prospect of a modern dairy building, however, would indicate future possibilities in this line. Notwithstanding interruptions in the milk supply, the gross revenue from this department has exceeded $14,500 for the past year. Much advice has been given, both written, direct and by actual demonstration, as well as assistance to farmers and dairymen in testing milk and milk products.

Sheep.—Owing to the very limited areas of pasture available, the two flocks of sheep, consisting of Leicesters and Shropshires, have not been materially increased in number. Rather, the object has been, by selection, to improve general quality and uniformity, with the result that these two breeds are very well represented at the present time. The demand for pure-bred rams has increased to such measure, that all available stock has been distributed at normal prices.

Swine.—Putting in practice the recommendations of the times, increased production has been shown to a considerable extent in this work, as during the past three years. Owing to the rapid advance in prices of hog-feeds, however, and to the fact that the price for the finished hog has by no means kept pace with the rise in costs of production, the usual profits shown by this department have not been so much in evidence during the past year. It will be the policy materially to reduce the breeding herds to a size commensurate with facilities and space at present available.

Two breeds are maintained, Yorkshires and Berkshires, of which large numbers of breeding pigs of all ages have been sold or sent to Branch Farms. Owing to the unsettled state of this particular line of animal industry, the demand for breeding stock has not been so keen as in years past.

Experimental work has been carried on (1) with weaning and growing pigs as to suitability of rations, methods of weaning, the use of skim-milk and substitutes, etc.; (2) with growing stock in reference to labour-saving devices; indoor, outdoor and pasture feeding, etc.; (3) with various forms of shelter for winter-fed hogs of all ages.

Feeds.—Owing to the high prices of feeds, special pains have been taken in the economical purchasing of feeds and in the testing of same. Substitutes and by-products have been used wherever the wisdom and economy of such have been indicated and efforts made to advise farmers through correspondence and the press, as to the necessity of thorough investigation of feeds before purchase.

The Health of Animals.—While recognizing the fact that none of the members of this Division has professional veterinary qualifications, more or less work on their part in connection with the health of animals is always necessary. This has involved the application of various methods of treatment for such diseases and conditions as contagious abortion, sterility and kindred ills of cattle; the prevention and treatment of navel ill in foals; testing various dips and applications for the destruction of lice and ticks on sheep; the study, in collaboration with the Health of Animals Branch, of parasitic infestations of swine and of methods of eradication and control, and of the control of parasitism generally in live stock; the testing of commercial and home-made fly repellants, etc., etc. Much useful information and data have been so accumulated during the past year.

CORRESPONDENCE, ASSISTANCE TO FARMERS, EXTENSION WORK, ETC.

There has been a considerable increase in correspondence during the past year and every effort has been made to supply full information in response to the wide range of inquiry on live stock subjects. Information concerning buildings has been in heavy demand and it would appear that, with more assistance and greater publicity, the extent of this work might be quadrupled. Over seven hundred complete sets of blue prints, with specifications in many cases, have been distributed, aside from the specific information given in correspondence.

Some really valuable extension work has been accomplished by the joint efforts of the Division of Animal Husbandry and that of Illustration Stations, consisting of a farm survey conducted in five counties in the province of Quebec. The results, so obtained, reveal facts of basic importance and will be published in bulletin form in the very near future.

ASSISTANCE TO BRANCH FARMS.

As in the past, assistance has been given to the Branch Farm system in (1) the outlining of experimental work, (2) the economical purchase of feeds, (3) the purchase of live stock, (4) the trial and adoption of labour-saving devices, (5) the planning and location of buildings. Special mention should be made of the improvement in the live stock on the Branch Farms, in which connection a large number of purchases were made this year. Although a number of buildings for various purposes have been erected during the year a number of others already planned and authorized have, of necessity, been held in abeyance.

GENERAL.

While circumstances have necessitated that the three assistants of this Division devote much time to routine and experimental work on the Central Farm, they have judged at several of the larger exhibitions and at a large number of county fairs, and have attended demonstrations, lectures, conventions, and meetings in general in Eastern Canada, in the interests of live stock increase and betterment.

Division of Field Husbandry.

Field investigations in soil management, crop management and agricultural engineering were continued during the past year. Soil cultural and crop rotation work is being conducted on all the branch Farms and Stations in the Prairie Provinces.

On the Eastern Canada and British Columbia Farms and Stations, rotation investigations are established and cultural work is being introduced as circumstances permit. This latter work is at the present time under way on the Experimental Farm, Charlottetown, P.E.I. No enlargement of the limited field crop investigations being conducted at the Central Farm, Ottawa, is possible since the available suitable land is fully occupied with crop rotations.

Cost of production of crops is receiving attention and observations are being made with regard to the effect which factors such as labour-saving implements and different methods of cropping and cultivation have in this connection.

FIELD CROPS AT THE CENTRAL FARM.

The crop season of 1919 was made up of extremes of cold, wet and hot weather resulting generally in poor yields of cereals and potatoes, roots and corn. The crops at the Central Farm were noticeably affected but not nearly to the extent observed on farms in the neighbourhood where no regular cropping system was followed and indifferent cultural methods practised.

The spring was unusually late, the rainfall in the months of April and May being considerably above the average, retarding seeding and planting operations. In June the weather turned very warm and dry, the drought continuing throughout the summer.

The hay crop was good, averaging on the Farm 2·57 tons per acre, corn for ensilage and oats averaged 14 tons and 52 bushels per acre respectively. Conditions for fall ploughing were very favourable, which resulted in this important work being completed before frost stopped the ploughs.

Horticultural Division.

The work of the Horticultural Division is subdivided into fruit culture, vegetable culture, ornamental gardening, research, and greenhouse and canning experiments.

Among fruits the greatest attention has been paid to the apple, which is of much importance in Canada. At the Central Experimental Farm there is a large test orchard where varieties are compared and their relative merits studied. Very careful information has been disseminated throughout Canada as a result of these experiments. From time to time, during the thirty-two years in which these orchards have been established, test winters have occurred in which varieties were subjected to very severe weather conditions. The latest of these was in the winter of 1917-18 when many trees were killed. The

effects of this winter extended into the year 1919 when more trees, weakened previously, died. While the losses have been great, the information gained will be of inestimable value to fruit-growers, as it is these winters which enable the Dominion Horticulturist to revise the lists of recommended varieties, as without sufficient hardiness all the other good points of the fruits are of little value. The crop of apples at Ottawa was a good one in 1919.

A large number of new varieties of apple have been originated in the Horticultural Division. These are being thoroughly tested on the Central and Branch Farms and by many private individuals. It is believed that a number of these will be shown to be of such value that they will before long take the place of some of the older sorts. One of the most promising of these, which fruited in 1919 at several of the Branch Farms and was favourably commented upon, is the Melba, a summer seedling of the McIntosh. Among the new sorts are others of the McIntosh type which are in season between Melba and the McIntosh itself.

As it is believed that it is possible to obtain varieties of apples by cross-breeding which will withstand the severity of the winters of the Prairie Provinces the work begun by the late Dr. Wm. Saunders is being continued. The wild Siberian crab apple is hardy and fruits well over a large part of the prairies. Some of the first generation crosses between this and the apple are also quite hardy. Second crosses with larger fruit and more blood of the apple are now being tested. The Experimental Station at Morden, Man., is specializing in prairie horticulture, and about forty acres have been planted to fruits. Some of the varieties of apple began to fruit at this Station in 1919.

Much attention is also being paid to plums in the Horticultural Division. There is a great part of Canada where the European or Domestica plums do not succeed, whereas the native plum is found in very cold districts. What is being looked for, then, are improved forms of the native species. Earliness is one of the chief requisites of these plums, as the seasons in the districts where they are needed are relatively short. Some very good early ones fruited at Ottawa in 1919, and are being propagated for further test.

As the breeding of new varieties of fruits is considered to be one of the most important lines of work that the Horticultural Division can be engaged in, much work in this direction was done with strawberries, raspberries, gooseberries, and grapes in 1919. The Portia strawberry, which originated in the Horticultural Division, some years ago, was found to be the best canning berry among many tested in 1919. It is also one of the handsomest and most productive of those under test, and has been very favourably reported upon by those who have tested it elsewhere.

The other experimental work with fruits, such as methods of spraying, pruning and cultivation, was continued in 1919.

Experiments in vegetables have always been an important part of the work of the Horticultural Division. During the past thirty-three years many experiments in methods of culture have been tried and varieties tested. Pamphlets have been published in regard to the principal vegetables. The importance of using good seed potatoes has been emphasized and proven by the results of experiments carried on in the Horticultural Division. In the year 1919 the usual very striking results were obtained from seed from different sources. As examples, seed of the best Green Mountain yielded at the rate of 330 bushels per acre and one of the poorest lots only 46 bushels per acre. One seed stock of Irish Cobbler yielded at the rate of 378 bushels per acre; another at the rate of 37 bushels per acre. Experiments at the Central and Branch Farms continued to prove, in 1919, that many farmers in some parts of Canada plant potatoes too late for largest yields.

As early vegetables are what bring the greatest profit to the growers and are among the most popular with the amateur gardener, and as many of the vegetables grown in Canada were originated in other countries where the season is longer and require more time to mature and possibly a longer period of hot weather than they get in many parts of Canada, it was felt by the Dominion Horticulturist that one of the most important lines of work to be undertaken was the development of earlier and better strains and varieties. Thus, for a long time this work has been in progress, and as a result of it some very early varieties, particularly of corn and tomatoes, have been put upon the market after being thoroughly tested by many experimenters. In 1919 one of the newest varieties of corn, called Sweet Squaw, gave a very good account of itself, particularly in Manitoba where early varieties are much sought for. Work is being continued with most of the important vegetables.

Experiments in growing seeds of the principal vegetables were continued in 1919. Much useful information, which is available to seed growers, has been obtained during the past few years in regard to distances of planting, time of maturing, yields, insects and disease, and methods of wintering biennial vegetables for seed.

During the past three seasons special attention has been paid in the Horticultural Division to canning and other methods of preserving fruits and vegetables. While the war was in progress this work was of great assistance to the many persons who were anxious to conserve food for patriotic reasons, and now when the war is over and the price of these products continues very high just as much interest is shown for personal reasons. In 1919 a bulletin was published called "Preservation of Fruits and Vegetables for Home Use," in which was published the results of the experimental work which had been carried on and recipes recommended which had proven to be the best. This bulletin has been in great demand.

At the Central Farm and at the Branch Farms and Stations attractive ornamental grounds have been developed, which must be an inspiration to improve their own places to many of the thousands of persons who visit these Farms. In connection with the ornamental grounds are experiments in growing many species and varieties of ornamental plants. Their relative hardiness, blooming season, beauty, and general merits are determined and lists of best varieties published, which are very acceptable to flower lovers. In 1919 the iris, paeony, lilac and rose collections in particular attracted much attention.

While the greenhouses at the Central Experimental Farm are not very extensive, experiments of importance to vegetable and flower growers have been carried on therein. Especial attention was paid in 1919 to cucumber, tomato, and lettuce crops. For three winters experiments with head lettuce were carried on to find if, out of the many varieties which were successfully grown in milder climates, there were any which could be grown without scalding at Ottawa. This scalding of the varieties usually grown in greenhouses in the United States had prevented Canadian greenhousemen from attempting to grow head lettuce in greenhouses in Canada. Out of a large number of varieties tested, one sort, the Early Paris, has been found to develop practically free from scald, and is recommended for growing commercially in Canada.

Among flowers, special attention has been paid to the chrysanthemum, cineraria, cyclamen, and geranium. Thousands of persons visited the greenhouses in the autumn of 1919 to see the magnificent collection of chrysanthemums under test there. Many fine new varieties of geranium have been originated in these greenhouses and have been much admired.

The Poultry Division.

The work of the Poultry Division has continued to grow. During the past year there were seventeen Branch Farms besides the central plant at Ottawa operating a poultry plant.

The demand for bred-to-lay cockerels from pedigree stock has been much larger than the supply. Breeding eggs are supplied in limited quantities, and more incubation space has been added to the equipment at a number of the Stations in order to supply day-old chicks to some of those who are so situated that they cannot hatch their own chicks early enough.

PEDIGREE AND BREEDING WORK.

Pedigree breeding work has been carried on on the Central Farm for years. It is intended to extend this work gradually until it is conducted on every Farm of the entire system. The ultimate aim is to produce heavy laying strains from the leading varieties of fowl, always keeping in mind standard qualities.

While progress is of necessity slow, considerable advancement is being made. For instance, there was a strong feeling that high egg-laying records could not be made in the Prairie Provinces owing to the severity of the weather. It has been demonstrated that this is not so. At the Indian Head Farm some good records have been made. One White Wyandotte pullet, "Prairie Queen," laid 259 eggs in a year. At the Lethbridge Farm also where Barred Plymouth Rocks are kept, there have been very high averages made.

The most noteworthy pedigreed records to date are those at the Experimental Station at Sidney, Vancouver island, the White Wyandotte "Island Queen," with a record of 261 eggs in her pullet year, has produced six daughters that have given good records. "Island Princess," 274 eggs; "Princess Victoria,' 300 eggs; "Princess Royal," 291 eggs; "Princess Ena," 243 eggs; "Princess Alice," 201 eggs; and "Princess May," 214 eggs—an average production for the six sisters of 254 eggs.

DISEASE INVESTIGATION.

The work undertaken by Dr. A. B. Wickware in relation to poultry diseases is progressing favourably. Experiments are being conducted on avian tuberculosis, to determine, if possible, its exact relation to the types of disease to be found in the domesticated animals.

The life history of certain parasites and mites such as those causing scaley leg is being worked out.

Experiments are also being conducted on chicken-pox to determine the efficiency of different vaccines in the treatment and prevention of pox, canker, roup, etc.

A collection of internal worms such as tape-worms, round worms, etc., is being made to determine those commonly found in Canada and the type peculiar to each locality.

CHEMICAL INVESTIGATION.

Incubation.—Considerable work has been done during the year on artificial incubation, and the results obtained from the investigation and the study of the work of previous investigators and from the experience of the average poultryman showed quite clearly that there was a great need for further work on this subject. To that end, an experimental incubator was designed and built.

Eggs.—A start was made on the study of the physical and chemical characteristics of eggs. Barred Plymouth Rocks, White Leghorn, and White Wyandotte

eggs were analyzed to determine if there is any chemical, and hence nutritional, difference in the eggs of the different breeds. The results showed little or no difference. It seems quite probable that there is as much difference in eggs from individual hens of the same breed as in the average of a number of eggs from hens of different breeds.

Chick Feeding.—During the months of July and August some experimental work in chick feeding was carried on. A study from the results of different pens showed that eggs, meat meal and greens are essential for proper vitality and development and, of these, eggs played a very prominent part.

Further chemical research work is being conducted on incubation, brooding, feeds, nutrition, the value of eggs and poultry in the diet, etc., the results of which will be reported as the work progresses.

EXTENSION WORK.

Under this head comes such work as "exhibitions," "the farm egg and poultry account," "survey work," "judging," "institute work," and the work conducted by the poultry inspector for the Maritime Provinces.

Exhibitions.—During the year the Poultry Division has contributed to all the exhibits made by the Extension and Publicity Division throughout the Dominion, and in addition to this, a special poultry exhibit covered a circuit of eleven fairs in Ontario during November, December and January.

Farm Egg and Poultry Account.—This is a simple form for the purpose of supplying a convenient method of keeping accounts in the poultry plant.

The advantage is mutual. Better methods have been adopted. Figures as to profit and loss are available. The division obtained a good deal of useful information as to market, feeds generally available, prices, and the outlook in the locality for the poultry industry. In return the farmer received the free blank forms, seasonable advice and replies to questions on feed and management.

Survey work.—The work started in Quebec from the Experimental Farms has been continued and in addition to this the officer in charge has acted as inspector over similar work conducted at four centres by the Quebec Provincial Department, which inspection requires a visit to 115 competitors once every three months. He has also attended a large number of institute meetings, has assisted at the short courses conducted in that province and, during the season, judged poultry at a number of fairs.

Inspection.—Something similar to the survey work conducted among the farmers surrounding the Experimental Stations in Quebec was this year started in the Maritime Provinces.

In addition to the survey work from the Experimental Farms, is included the giving of assistance and advice to the poultrymen in charge of the work at the Farms, demonstration and lectures, speaking at institute meetings, judging and demonstrating at fairs, and the inspection of the laying contests conducted by the Experimental Farms at Charlottetown, Nappan and Cap Rouge, and the contest at Truro under the management of the provincial department of Nova Scotia.

EGG LAYING CONTESTS AND RECORD OF PERFORMANCE.

The establishment of a Record of Performance for poultry which was instituted from the first of November, 1919, marks an advance step in poultry keeping. At the present time, Record of Performance is divided into two sections, Section A and Section AA. Section A is the inspection of trap-nested flocks on the

farmer's own premises, which comes under the Poultry Division of the Live Stock Branch. Section AA is the trap-nesting of the birds in laying contests and tests and is conducted by the Experimental Farms Branch.

The egg laying contests conducted in 1919-20, with the number of birds and the locality, is given in the following table:—

Egg Laying Contests, 1919-20.

Name.	No. Birds.	Location.
Canadian Egg Laying Contest	500	Ottawa.
Prince Edward Island Egg Laying Contest	220	Charlottetown.
Nova Scotia Federal Egg Laying Contest	200	Nappan.
Quebec Egg Laying Contest	200	Cap Rouge.
Manitoba Egg Laying Contest	200	Brandon.
Saskatchewan Egg Laying Contest	190	Indian Head.
Alberta Egg Laying Contest	120	Lethbridge.

The Bee Division.

Under the stimulus of the prevailing high price of honey, the year has seen a considerable increase in the number of colonies and out-apiaries kept by commercial beekeepers, who are thus definitely building up honey production in Canada. There has also been a large number of beginners in beekeeping.

Bees are now being kept at sixteen of the Experimental Farms. The latest addition is Kapuskasing in Northern Ontario, where valuable results are expected because of the extreme conditions in this northern locality, which nevertheless is not unpromising for honey production.

The season of 1919 was favourable for the production of clover honey at the Central Farm, Ottawa; 8,183 pounds were obtained, bringing the annual average production of honey per colony for the past seven years up to 134 pounds.

The testing and development of methods of managing bees planned to reduce labour and increase the production of honey per colony under the conditions found at Ottawa and other places in Canada, have been continued at the Central Farm and on some of the Branch Farms, and are giving promising results. The experiments are mainly in the direction of preventing swarming, improving wintering—including a study of best foods for the winter—and increasing the force of bees raised in each colony in time for the main honey flow.

Experiments to ascertain the actual value of honey bees in the production of apples in Nova Scotia have been undertaken at the Experimental Farm at Kentville.

Co-operative experiments with private beekeepers in certain little-known and promising localities have been continued.

An experiment in the isolated mating of queen-bees was carried out at Duck Island, at the eastern end of lake Ontario. The results have been of considerable scientific interest and have indicated that this is likely to be a satisfactory place for studying isolated mating, which appears to be essential for the maintenance of any definite work in breeding bees for improvement.

Tobacco Division.

While the spring of 1919 was rather late and followed by drought, still the unprecedentedly high prices paid for tobacco made the crop highly profitable.

In Ontario the production of White Burley was the largest since 1913, and was sold at an average price of 40 cents per pound. The flue-cured tobacco or Bright Virginia type was sold at an average price of 60 cents per pound.

In Quebec the season was more favourable for tobacco growing, and a fair crop was obtained. The demand for cigar tobacco, binders and fillers is strong, and an outlet has been found on the British market for this tobacco.

On the Experimental Station at Farnham, Que., the results obtained were very good. The yields and the quality of the crop were better than previously.

The fertilizer experiments conducted by the tobacco inspector and the superintendent of the station resulted in some exceptional and very profitable yields. No appreciable results were obtained from the application of lime.

The yields of the Cuban and the Yamaska varieties were 1,607 and 1,598 pounds per acre respectively.

The semi-hot bed proved vastly superior to the cold bed for the production of seedlings, both from the standpoint of earliness and the number of plants produced.

On the College Farm at l'Assomption, Que., the experiments conducted were not so successful, owing to the late date on which the work was started.

On the Experimental Station at Harrow, Ont., the results were highly satisfactory. The White burley and flue-cured tobaccos were the best produced since the Station was established. The White burley sold for 44 cents, and the flue-cured for 68 cents per pound.

The results secured at Harrow with the semi-hot bed confirm those obtained at Farnham.

During four years' experiments no advantage has been gained by sprouting the seed before sowing. Sowing dry seed is recommended.

The use of a black compost as a top dressing for seed beds is strongly recommended.

The value of home-grown seed is, at last, fully recognized by the tobacco grower and the seed merchant. Despite the fact that over 150 pounds of seed, sufficient to plant 24,000 acres, was grown on the Station in 1919, there will be an appreciable shortage of acclimatized seed.

Fall ploughing for burley again proved profitable. The increase in yield was estimated at $24.64 per acre. Fall ploughing was also advantageous in giving a more even distribution of labour and materially lessening cut worm damage.

Fall manuring for burley gave an increased yield valued at $100.32 per acre over spring manuring.

The best chemical fertilizer formula used for flue-cured tobacco netted a profit of $238.35 per acre, and for the White burley of $165.90 per acre.

On the Central Experimental Farm, at Ottawa, the experiments conducted on the plots were very satisfactory. A number of varieties and hybrids of cigar tobacco were tested on a small scale. A good quantity of seed of the varieties best adapted to commercial uses was also produced. There is a great demand for this seed among the growers of Quebec.

The work of the tobacco inspector is being appreciated by the growers. The information relative to the soils most suitable to the different types of tobacco is meeting with favour. The fertilizer tests conducted by the inspector in co-operation with the growers proved highly remunerative. The yields in some instances were exceptionally large, especially with the flue-cured type, The information obtained by the inspector as to the acreage and yields of the 1919 crop was timely and proved helpful in the marketing of the crop.

Owing to the warm and dry season which followed transplanting, the losses from the root-rot disease were not so severe as in previous seasons. Judging

from field observations and counts, the mosaic and leaf spot diseases were not so prevalent.

Further selection work was carried on with the root-rot-resistant strains of the White burley and snuff types.

Division of Economic Fibre Production.

The work of this Division in 1919 was carried on along lines similar to those of 1918. However, much more progress was made in every department of the work, and a greater acreage was under crop, with a corresponding increase in the manufacturing of the resulting fibre.

SEEDING TESTS.

At the Central Experimental Farm, Ottawa, a total of fifty plots of one-tenth acre each was grown for test purposes.A great deal of attention was given to the rate of sowing, as many questions had arisen during the preceding year amongst growers regarding the proper amount of seed to sow per acre. It was unfortunate for the proper test of this matter that it was a very bad year for flax fibre, there being only about half a crop, except in a few isolated cases.

However, the results of these tests show that even in an unfavourable year, sowing at the rate of 84 pounds of seed per acre gives the best returns, both in yield and quality of fibre.

FLAX TESTS.

At the different Experimental Farms and Stations throughout the country, as well as by many private individuals, plots ranging from one-tenth to one half acre, were grown from seed supplied by the Experimental Farm, Ottawa. The crop resulting from this was to be returned to Ottawa, for tests regarding yield and quality of flax grown in the different localities. In many cases, however, principally on account of the bad year and poor yield, the result of these tests was not returned. From the crop that was returned it was found that New Richmond, Quebec; L'Assomption, Quebec, and Stanbridge East, Quebec, produced flax of a very fine quality. In Alberta, on irrigated land, a small quantity was grown successfully, being of a high grade both in seed and quality of straw.

The plots grown in British Columbia and Ontario did not arrive at the Experimental Farm, Ottawa, in time for retting in the fall of 1919, consequently testing these plots had to be postponed until the spring of 1920.

RETTING OPERATIONS.

Owing to the fact that there were 100 acres of Ontario Government flax grown at Willowdale, Toronto, in 1918, to be handled at the mill at Ottawa, practically all the retting had to be done on a commercial rather than on an experimental basis. All this flax was retted in 1919, partly dew retted and partly water retted. In water retting, the concrete tanks have a capacity of about one ton of straw each. It was found that by heating the tanks to 80 degrees F. a tank could be retted in 4½ days, with good results as to the quality of fibre produced.

SEED INSPECTION.

In order to safeguard the export to Europe of the 1919 crop, a system of grading and inspecting fibre seed was established, by which means the buyers in Europe were assured of reliable seed, and the growers here had, as an advan-

tage in the disposal of their seed, the fact that it had been passed by Government inspectors.

The chief officer of the division spent three months in Ireland during the end of 1919 and the beginning of 1920, and all possible assistance and advice was given to the Canadian flax growers in disposing of their seed. It may be said that the Irish growers expressed a decided preference for Canadian Ontario seed to that of any other variety.

FLAX GRADING.

A system of flax grading was started in 1918 and was found to be of the greatest possible advantage to the growers. This system of grading was enlarged in 1919, and it must be emphasized that, in order to obtain and retain a ready market, it will be necessary for all growers to have their flax graded in future. The grading system used in 1919 was the same as was adopted first in 1918.

NEW MECHANICAL APPLIANCES.

A Speedo scutching machine has been installed at the Experimental Farm, Ottawa, and is giving good results as to the amount of work it can turn out per day, but the fibre produced is not so good or uniform as the hand scutched fibre. Experiments with this machine are being continued and it is hoped that eventually it will be quite a boon to the flax industry.

The Vessot pulling machine is still also under experiment, and it has given every indication that it will eventually solve the difficulty of hand pulling.

There is also being tested out a new threshing and deseeding machine, which also promises to be highly successful.

PRAIRIE FLAX STRAW.

The experiment started in 1918 in connection with the prairie flax straw was completed in 1919.

It was found that prairie flax straw can be manufactured into binder twine and can be utilized in the manufacture of felt. The formation of a company to operate in Western Canada on this prairie straw is at present under consideration, and this should prove of great financial advantage to the western flax growers.

Division of Chemistry.

The loss, through resignation during the past year, of several members of the technical staff of the division very materially reduced the working force; this fact and the continuance of special war work requiring immediate attention has seriously affected the satisfactory progress of those investigations the prosecution of which constitutes the primary function of the division's activities. This branch of the work, however, has by no means been neglected and though, in certain cases, work has been suspended for the present, the more important investigations have been to a limited degree carried forward.

It is very satisfactory and encouraging to note the continued and ever-increasing response on the part of the farmers throughout the Dominion to take advantage of the offer of advice, information and suggestion in matters in which chemistry can assist practical agriculture. This must have resulted in a greater and more economic production of food stuffs on the farm in numberless cases. Correspondence with the " man on the land " has been from the establishment of the Farm system an important phase of the division's educational work. During the past year this correspondence has been more than usually heavy, and, one may be assured, has accomplished practical results of no small value.

The total number of samples received for analysis and reported on during the past year was 7,643.

Of these, 3,916 were flour, submitted by the Wheat Export Company, the official Canadian agents of the Allied Governments, and to whom had been entrusted the purchasing of all flour supplies, since the early days of the war, for military and civilian use overseas. Our control work in this matter during the past four years has effected for the Empire and the Allies a saving of many thousands of dollars and, by keeping down the moisture content, has ensured the flour from spoiling during ocean transportation and storage. It has also, no doubt, been of value towards maintaining overseas the reputation enjoyed by Canadian flour for quality and strength.

The samples of feeding stuffs include a series of some 400 samples of feeds: bran, shorts, oil cake meal, chops and provenders, etc., etc.,—collected throughout the Dominion. This investigation has had for its object the obtaining at first hand information as to the character, quality and purity of the various feeds as found on the Canadian market. In addition to a complete chemical analysis, a microscopical examination of each sample has been made by the Seed Branch to determine the relative purity of the feed with respect to the presence of noxious weed seeds and other foreign matter. The work on this investigation is about completed and the publication of the results will not only indicate the condition of the feeds as they are upon the market to-day, but prove a valuable report for reference and for the general use of farmers and raisers of live stock in the Dominion.

About 100 samples of feeding stuffs have also been submitted by farmers, and these have been similarly analysed and reported on as to nutritive value and purity. The reports thereon have been written in such a way as to give the sender direct and definite information regarding the quality and nutritive value of the feed and to assist him in making an economical choice among the various feeding stuffs available for purchase.

Assistance has been rendered to farmers by the examination of soil samples. These are not submitted to complete chemical analysis, but such work of a chemical nature and physical character is done on them as will enable a report to be made as to their general nature and fertility, with suggestions as to improvement by drainage, manures, and fertilizers, suitability for various crops, etc.

Closely related to this phase of work has been the examination and reporting on several areas in the northwestern provinces, British Columbia, and New Brunswick under consideration for the settlement of returned soldiers.

The chemical and physical examination of soils in connection with the classification of certain lands in southern Alberta and Saskatchewan has been continued. This investigation, which is undertaken for the Reclamation Service, Department of the Interior, has for its chief object the determination of the "alkali" in suspected areas, assisting in the classification of the lands involved into irrigable and non-irrigable. Soils from areas under consideration for reclamation by drainage, have also been examined and reported on as to suitability for cultivation. Progress has also been made in the study of a number of problems closely related to the occurrence of alkali, e.g., the alkali content of soils as related to crop growth and the influence of irrigation on the vertical movement of alkali.

The influence of seasonal conditions—precipitation and temperature—on the composition of wheat as grown on the Farms and Stations of the Experimental Farm system throughout the Dominion is being studied. This investigation, carried on with the co-operation of the Meteorological Service, has been in progress for a number of years and is yielding results of a valuable character in connection with the agriculture of the wheat-growing areas of Canada.

Analysis of sugar-beets, from Canadian-grown seed, as grown on the branch Farms and Stations, have been made. The results have demonstrated the high quality of beets from Canadian-grown seed and the suitability of soil and seasonal conditions in many parts of the Dominion to produce roots rich in sugar and of high purity.

The relative feeding value of a large number of standard varieties of field roots—mangels, turnips, and carrots—as grown on the Central Farm, has been determined. As in former years, great differences in dry matter and sugar content were found between varieties in the same class of root. This work of late years has been carried on in conjunction with the Division of Forage Plants, the chemical data assisting in the selection and breeding of important varieties.

Investigational work with fertilizers has been continued on a number of the Farms and Stations of the system. While it would be impossible in this report to enter into any detailed discussion of the results obtained, one or two outstanding features may be mentioned, as follows: the value of basic slags for heavy clay loams well supplied with humus; the superiority on the larger number of soils and for most farm crops of a "complete" fertilizer over one furnishing a single fertilizing element; the greater economy on "worn" lands of moderate applications of fertilizer in conjunction with farm manures than from the use of either alone; the forcing value of nitrate of soda as a top dressing in the earlier weeks of growth (*a*) on meadows, and (*b*) for many market garden crops.

Rain and snow have a fertilizing value. Analysis of the precipitation at Ottawa shows there is furnished from this source between 5 and 6 pounds of nitrogen, per acre, annually, in readily available forms.

The analysis of waters from farm homesteads continues to be found a popular and valuable phase of the division's activities. While the results of this work continue to show that the supplies on many farms throughout the Dominion are seriously polluted, it is equally evident that a large number of our farmers are now alive to the importance of pure and wholesome water for man and beast. It is encouraging to note that many are taking steps to secure such a supply and to safeguard it against local contamination.

Ground limestone as an agent for correcting soil acidity and as an amendment for the physical and chemical improvement of soils, is yearly receiving an extended use in the eastern provinces of the Dominion. In this connection the division has analysed during the past year a number of samples of limestone and reported on the quality of the deposits involved, for the manufacture of ground limestone.

The Meat and Canned Foods Division (Health of Animals Branch) submitted for examination and report during the year, 1,809 samples. These included condensed milk, butter, oleomargarine, lard, tallow, denaturing oil, preserved meats, sausages, preservatives, colours and dye stuffs, spices and condiments, evaporated fruits and vegetables, etc. The results of this work are used in standardizing and controlling the purity of the products of the packing-houses and canneries of the Dominion. Chemical assistance has been rendered several Departments of the Government service and in this connection it may be stated that the cancelling ink now used by the Post Office Department throughout the Dominion is manufactured from a specification drawn up by the division, after much careful investigatory work.

Division of Botany.

DESTRUCTIVE INSECT AND PEST ACT WORK.

The efforts of the department to investigate the white pine blister situation in Canada were continued during the year. The establishment of four control areas begun in 1918 was completed, and a fifth area laid out. The object of the control areas is to determine the efficacy of removing all currant and gooseberry vegetation which are within 500 yards of the white pine control area. Northwestern Ontario was found to be free from the disease. No increase in the number of diseased trees was found in 1919 over the number found in 1918. It would appear that if there is any progress of the disease—which is doubtful—such progress is extremely slow.

By Order in Council passed April 4, 1919, subsection *f* of section 7 of the Destructive Insect and Pest Act relative to admitting currant and gooseberry plants from the state of New York into the province of Ontario, was amended to permit of such admission.

Section 12 of the same Act was amended April 4, prohibiting shipments of five-leaved pines, currant and gooseberry plants into Alberta and British Columbia from any other province of the Dominion.

By Order in Council passed on April 19, subsection *g* is added to section 7 of said Act, prohibiting the importation into Canada of certain species, hybrids and varieties of *Berberis* and *Odostemon* (Mahonia).

Section 12 of the same Act was amended April 19, prohibiting shipment of certain species, hybrids and varieties of barberries and *Odostemon* (Mahonia) specified under subsection "*g*", section 7, into Manitoba, Saskatchewan and Alberta from any other province of the Dominion.

The potato certification service is making satisfactory progress. It is continually made use of by farmers and seed growers and is now being extended into the provinces of Manitoba, Saskatchewan and Alberta, where it has met with the most valuable co-operation from the provincial authorities. In Ontario the work is beginning to show good results. Certified seed potatoes towards the end of the fiscal year brought prices as high as $5-$6 per bushel. With wider production of disease-free seed potatoes, these prices will tend to lessen and the object of the work will be attained, namely not merely to encourage the growing of high-class seed potatoes, but to effect a general improvement of yields owing to the elimination of yield-reducing diseases of the seed tuber.

The free nitro-culture distribution was continued, and is being made use of more widely. The results obtained from the use of these cultures have been very promising in many cases throughout the Dominion.

The work in the field laboratories has made satisfactory progress. At the St. Catharines Field Laboratory, attention is paid to the control of the very destructive brown rot of stone fruits, peach canker, a troublesome disease, leaf curl of raspberries, and many other problems affecting the local industry. At the Charlottetown Laboratory, the principal investigations related to early and late blight, leaf roll, mosaic, curly dwarf, and similar diseases of potatoes. Spraying of potatoes is more systematically practised in Prince Edward Island than before, largely due to the demonstrations of the beneficial results from spraying, carried on by the officers of the division.

At Fredericton, attention is largely devoted to investigations of mosaic and anthracnose disease of beans, the diseases of peas and other vegetables, as well as to the control of club root of turnips, glume spot of wheat, and other local problems.

Co-operative work is conducted at various private farms as well as at Cap Rouge and St. Anne de la Pocatière, Que.

The rust research work is carried on under direction from Ottawa, under the immediate supervision of the officer in charge, at Saskatoon, Indian Head, and Brandon.

Some interesting results have been obtained. The black stem rust was found to winter over on wild barley, and summer spores collected in April, having passed over from last season on this weed, produced, when transferred to wheat, the typical red rust stage. Late grain was badly rusted during the year—which is the usual experience. Several localities in the west were entirely free from rust.

Investigations into the nature and control of a number of grain diseases were carried on, and the experimental plots established in various localities throughout the west are getting into shape for "strains of rust-fungus" observations. The barberry eradication measure promulgated by the department has met with every support from the provincial authorities concerned.

From January to the end of March, the officer in charge of the laboratory at Saskatoon gave a course in plant pathology to the university students.

Other investigations of a technical character are being carried on at all the laboratories; these are partly of an informatory and partly of a research character.

In economic botany a large amount of work was done in giving information on weed control, medicinal and poisonous plants, etc., and in the identification of specimens sent in. An investigation was made into plants useful for binding drifting sands. Progress was made in the compilation of a catalogue of the native plants of Canada.

The Cereal Division.

THE SEASON.

On the whole the season of 1919 was much more favourable for cereals in Eastern Canada than in the central and western parts of the country. There was a period of rather acute drought in Ontario and in parts of Quebec during June and July, but this was much less severe than the drought from which large areas in Saskatchewan and Alberta suffered.

From a cereal point of view the year was one of the poorest on record, so far as yields are concerned; but the abnormally high prices enabled many of the farmers to make good profits from yields which in pre-war times would have been produced at a loss.

TESTS OF VARIETIES.

The methods of carrying on plot tests are being gradually improved from year to year as experience accumulates and the imperfections of the older systems are revealed. It is impossible, however, to carry on very instructive tests under the severest conditions caused by heat, drought and high winds, such as prevailed at a few of the Farms this year. The results at most of them, however, were interesting and valuable, but the details cannot be given in this brief summary. Many hundreds of varieties are being tried and from these the best only are being retained for propagation and introduction. At Ottawa where the largest number of new varieties is constantly under test, about 1,100 sorts were grown in 1919.

NEW VARIETIES.

The new hulless oat, Liberty, Ottawa 480, has produced a distinct sensation. It excited so much interest that the stock for distribution proved altogether inadequate. About 550 samples were sent out, although, had the material

been available, 10,000 samples could have been placed. The unusual character of this variety no doubt induced many farmers to apply for it. While this oat may not prove well adapted to every district in Canada, it certainly gives promise of being valuable over very large areas.

The extremely early maturing bean which is being sent out under the name of Norwegian, Ottawa 110, was in considerable demand also, but the distribution of it was restricted to districts where the ordinary beans do not succeed. While the Norwegian is satisfactory for cooking purposes, its brown colour is a disadvantage and we do not wish to encourage the growing of this bean where the more popular white varieties will mature.

A new fibre flax, Longstem, Ottawa 52, was available in small quantities but only a very few samples could be distributed. Arrangements have been made, however, to send out a much larger number next year, as it is believed that this flax has quite a future before it on account of its extreme length. It has already been tested for fibre production and found to be of unusual value.

No distribution of the new pea, Mackay, Ottawa 25, was possible this season, but if the harvest of the coming summer is at all good there will be a small stock available to send out next winter. This is one of the most productive peas known.

MARQUIS WHEAT.

This famous wheat, now recognized as the standard variety in Canada, has added another triumph to its already long list of victories by winning the highest award at the International Soil Products Exposition at Kansas City, Missouri. The prize winning exhibit was grown near Regina, Sask. In spite of the efforts which have been made, by extensive advertising, to displace Marquis by more recently introduced varieties, the pre-eminence of the older sort is still maintained, there being undoubtedly a considerably greater acreage of Marquis sown (in Saskatchewan and in some districts in Manitoba and Alberta) than of all other varieties of wheat together.

FREE DISTRIBUTION.

Although a very large number of applications for free samples was received, the number distributed was not so very great, because we were obliged to disappoint thousands of applicants for samples of Liberty oats: applicants who did not seem anxious to receive anything else but the one sort. About 9,000 free samples were sent out; these consisted of spring wheat, oats, barley, peas, beans and flax. This was the first season in which beans and flax were on the list of grains for distribution.

MILLING AND BAKING TESTS.

It was not possible to give much attention to milling and baking tests during the past year as the time of the assistant who has carried on that work in the past was unavoidably given largely to other work. The principal tests which were made were to determine the baking qualities of a number of new cross-bred varieties of wheat, crosses between Marquis and Prelude, and between Prelude and another early sort which is not yet named. Other tests and investigations, such as those in regard to the effect of storage, have been suspended, but will be taken up again as soon as an assistant trained for such work has been obtained.

PUBLICATIONS ISSUED.

During the year two important little bulletins were issued, the first being entitled, "The Best Varieties of Grain," in which details were given as to the varieties recommended for the different soils and climate of Canada. The other was called "The Use of Coarse Grains for Human Food." The aim of this bulletin is to encourage the use of oats, barley, peas, etc., as human food, on account of their advantages in price and in healthfulness; and also to show farmers in outlying districts how they can reduce the cost of their food by growing suitable varieties of grain and grinding them at home for their own use.

Division of Forage Plants.

FIELD-ROOT SEED GROWING AS AN EMERGENCY.

In conformity with the department's policy to ensure, through the Dominion Experimental Farms, an adequate supply of good field-root seed, the commercial stocks of which were seriously depleted during the war on account of import difficulties, the Division of Forage Plants arranged, in 1918, to have available large quantities of field-roots of the most popular varieties so as to be able, in case of need, to produce, in 1919, what quantities of seed might be needed to supplement the commercial supply.

The precaution was found to be justified and, accordingly, root seed growing as an emergency measure was undertaken in 1919. The following approximate quantities were produced:—

Mangel seed	15,000 lb.
Swede turnip seed	12,000 lb.
Carrot seed	1,000 lb.

This seed was handed over to the Seed Branch and, through its Markets Intelligence Division, supplied largely to farmers' organizations.

FIELD ROOT SEED GROWING AS A PERMANENT INDUSTRY.

As a result of what has been experienced during the last few years in the matter of maintaining an adequate supply of field root seed of satisfactory quality, the attention of the Division has been turned on considering seriously the possibilities for developing a Canadian root seed growing industry which, if successful, might make the Dominion independent of imports.

Experience has already shown that a fine quality of seed of the various root crops can be grown in Canada but whether it can be done in successful competition with European countries is still an open question. The Division has realized that, in order to compete with Europe, it is, in the first place, imperative that the Canadian-grown seed represent first-class varieties, i.e. improved varieties, true to type and name. In order to obtain such varieties, the Division has instituted a system whereby it will be possible to improve gradually nearly all the main varieties of mangels, swede turnips, and carrots now on the Canadian market.

Quality of Field-Root Varieties.—The system referred to, although primarily worked out for the purpose of bringing about improvement in the main varieties sold in Canada, will also, it is hoped, have an educational value inasmuch as it will allow the distribution of samples of varieties of guaranteed quality. At the Central Experimental Farm at Ottawa, as well as at some of the Branch Farms, improvement of a few varieties has already been accomplished, and satisfaction with the work done has been expressed by many who have tried the varieties in question.

The value of good seed of improved varieties can, it should be admitted, not be demonstrated to better advantage than just at present. During 1919, the division endeavoured to test practically all the root varieties offered for sale in Canada, the results showing that a very large number of varieties of an amazingly poor quality are sold at present. There are, indeed, indications to the effect that the quality of imported seed, in respect to varietal type and trueness to name, may continue to remain low for a time, largely on account of the fact that certain European countries have for export immense quantities of seed of a rather questionable "genuineness." With the imported varieties low in quality, the Experimental Farms will therefore have a particularly good opportunity to demonstrate, through distribution of seed of guaranteed purity, of what great importance the use of really good, genuine seed is. When such demonstrations succeed in creating a general demand for varieties of a better type than are now available commercially, then, it is safe to predict, the Canadian farmers will find it possible to secure far better returns from root crops than they do at present.

GRASS AND CLOVER BREEDING.

The breeding work with grasses and clover which during the war had to be largely curtailed was resumed this year. About two dozen new varieties of timothy were planted for comparative tests as to uniformity of type and value in general. For the same purpose five varieties of Orchard grass, six of Kentucky Blue grass, and thirteen of Western Rye grass were also planted.

Special attention has been paid to the Western Rye the last few years, following the discovery that, in mode of fertilization, this grass behaves much like wheat, *i.e.*, it is normally self-fertilized and therefore breeds true to type. A total of about one hundred distinct types, collected in Western Canada, have been brought to the Central Experimental Farm at Ottawa, where they will be thoroughly studied and tested for comparative agricultural value during the next few years.

The Division of Illustration Stations.

STATIONS IN THE WEST.

In 1919, seventeen Illustration Stations were operated in Alberta and fifteen in Saskatchewan, the rotations and cultural methods being similar to those carried on in 1918. In 1919, however, the weather conditions in the southern and central parts of both provinces were very unfavourable for all kinds of farm crops, but it was very evident that where a rotation included summer-fallow, much better crops were obtained.

Forage Crops.—The natural prairie is rapidly being broken, making it essential to find a substitute for prairie hay. Western Rye grass has been grown for several years on the Illustration Stations and, wherever possible, seed is grown, as there is a great demand for this seed, at prices such as to make it a profitable crop, in addition to which the refuse may be used for fodder.

Corn.—Corn growing in some cases was successful, while in others the extreme drought and early frost did considerable damage. However, it is advisable to grow a limited amount of corn each year to ascertain whether or not a profitable crop may be grown which would eliminate part of the summer-fallow. The Northwestern Dent variety, so far has proved to be the best.

Pure Seed.—Owing to the increased demand for good seed, the Illustration Station Division is making a special effort to produce large quantities of pure seed. The operators of the Illustration Stations usually, after the first year, have sufficient surplus seed grown on the Illustration fields to sow many acres on their own farms. The second year they usually have a large quantity for sale to their neighbours, at reasonable prices.

STATIONS IN QUEBEC.

In 1919, sixteen Illustration Stations were in operation in Quebec, on many of which much progress is being made. In the Gaspe district, where potatoes are grown to a large extent, after-harvest cultivation is practised in preparing the land for the potato crop. Two-year meadows or pastures are broken about July 10, or earlier, the land being ploughed shallow, rolled and cultivated at short intervals to keep down all weed growth until autumn, when it is thoroughly ploughed and set up to the winter frost. Summer cultivation makes the sod suitable for the potato crop and destroys weed growth.

Corn.—When suitable varieties of corn are selected, it can be profitably grown in most parts of the province.

Roots.—Roots are grown on all the Illustration Stations. The farmers find them a necessary crop, as they supply succulent food to mix with the dry fodder for winter feeding, and they are also relished by all kinds of live stock.

Seed Grain.—One-quarter of the rotation is sown with one of the leading varieties of grain, which usually gives a surplus of seed to be sold for seeding purposes to the farmers of the surrounding district.

Clover.—One of the outstanding features of the illustration work is the improvement in the clover and timothy crops. Mr. Samuel Reddick, of Aubrey, Que., reports an increase in four years, o $15 per acre on his clover hay and $50 per acre on his clover seed. Clover seed growing was almost unknown in the Aubrey district before the Illustration Station was established, while a low estimate of the 1919 crop is $30,000. Several other districts, where Illustration Stations are in operation, are making good progress in growing clover for seed, and may even surpass the Aubrey district.

Tile Drainage.—There are many parts of the province which could produce one-quarter more, if the land were tile-drained. An illustration on one of the Stations has shown an increase of 26 bushels of oats per acre in two years. In 1919 the increase in yield was not so noticeable on account of the season being particularly favourable to wet land and to the manner in which the land is now being ploughed and ridged.

New Stations.—During 1919, the illustration work has been extended somewhat in Quebec, seven Stations having been established which will be in operation in 1920.

Illustration work has also been extended to New Brunswick and Nova Scotia. Six Stations have been selected in Nova Scotia and four in New Brunswick. These will be in operation during the coming season.

The Division of Extension and Publicity.

The work of the Division of Extension and Publicity during the year consisted, as in previous years, in the preparing and staging of exhibits at fall fairs, poultry shows, seed fairs, and corn shows, and in the distribution of literature at these different exhibitions.

The chief of the division, who left for France early in 1919, in charge of an exhibit to the Industrial Fair at Lyons, did not return to Canada until August. During this time an exhibit was prepared and sent to Western Canada, and shown at the following fairs: Regina, Calgary, Edmonton, Saskatoon, and

Brandon. Exhibits were also sent from the Central Farm to a number of fall fairs in Ontario, and larger exhibits were staged at Ottawa and London. During the fall and winter a special poultry exhibit was sent out to a number of leading poultry shows, including Toronto, St. Catharines, Peterborough, etc.; exhibits were also sent to corn shows and seed fairs in western Ontario.

Exhibits were also sent out from the Branch Farms to the local fairs, although in some of the provinces it was found necessary to curtail the work owing to the scarcity of assistants. In Manitoba and in parts of British Columbia, the exhibition work consisted chiefly in the exhibiting of live stock.

As the same exhibit structure had been at some of the Branch Farms for a number of years, it was thought advisable to have these changed, and during the month of January the structures from Saskatchewan, Alberta, and British Columbia were assembled at Lethbridge, where the British Columbia exhibits were repaired, revarnished, and the legends changed to suit the Prairie Provinces, and the prairie structures changed to suit British Columbia, and were then reshipped to the different Farms.

Applications to the Central Farm for publications were also attended to, and much literature, chiefly exhibition circulars, was distributed at exhibitions.

Experimental Station, Charlottetown, P.E.I.

Seeding was not general in Prince Edward Island until May 18. The season, though late, was favourable for all farm operations. Frequent showers throughout the growing season gave full crops of hay, grain and roots. The early part of haymaking, which commenced July 17, was fine; this was followed by showers which retarded the work and made it difficult to save the balance of the crop in good condition. Grain was cut August 25; a good harvest followed and all cereals threshed out better than was expected. A frost on September 15 killed potato tops in many sections of the province; quite a little rot was reported, but the crop in general was a good one. Satisfactory yields of turnip and mangel seed were obtained.

The favourable weather during the autumn enabled the farmers to get their work well completed before winter, which set in with great severity the third week in December.

The first Prince Edward Island egg-laying contest of twenty pens, was a great success. A second one was started with two additional pens on November 1, 1919. The birds were not as mature as they ought to have been and the winter laying has not been up to expectations, but these contests have already created a great amount of interest in the improvement of the poultry industry in this province.

An office building and seven contest poultry houses were constructed during the year.

Several valuable additions were made to the Ayrshire herd at the Station, which now totals six cows and is headed by the valuable bull Ottawa Ivanhoe.

Experimental Station, Fredericton, N.B.

The open autumn of 1918 permitted of fall work on the land being brought well toward completion. There was very little winter-killing. Spring opened early, the first ploughing being done April 23.

June and July were dry and cool, August and September moist and cloudy with heavy rains in the latter month which made harvesting difficult. The first heavy frosts occurred October 2 and 9. The winter of 1919-20 has been one of the roughest recorded in the province.

Fourteen draught, and two general-purpose horses, together with 3 three-year-old colts, 3 two-year-olds, one yearling and two colts under one year, are on the Station. Of these seven are pure-bred Clydes, nine high-grade Clydes and five high-grade Percherons.

In dairy cattle, the dairy Shorthorn, Ayrshire and Holstein are kept. The first-named breed gave the highest producer for the season, 14,682 pounds milk for a lactation period of 395 days. Grading-up experiments are under way with all the above breeds.

In swine, the Yorkshire breed is kept and a number of pigs were sold for breeding. The flocks of Shropshire and Cheviot rams were sold to farmers.

With poultry some very instructive data as to cost of production were gathered.

With bees the average return per colony was valued at $22.18.

In field crops, hay yielded a little over two tons per acre; oats, 65½ bushels; turnips, 733 bushels; and ensilage corn, 17·2 tons per acre. Potatoes yielded 297 bushels per acre.

Test work with cereals, forage plants, fruits and vegetables was conducted.

A comparison of Canadian-grown turnip seed with imported seed showed the former as yielding over 300 bushels per acre more. A considerable quantity of turnip seed was obtained from stecklings grown on the Station the year before.

A bull barn was built during the year, also two brooder houses and some general repair work done. Two acres were stumped, burned over and ploughed and a large quantity of stone removed.

Exhibits were made at several fairs and a number of meetings addressed by the superintendent and his assistant.

The Fruit Growers' Association and the Farmers' and Dairymen's Association, of New Brunswick, held excursions to the Station.

Experimental Station, Kentville, N.S.

The spring weather in 1919 was about perfect for putting in the crop. The soil dried out early, worked up in good tilth, and the weather remained fine during seeding operations. The season was good for crop growth, the rainfall being about normal, amounting to 16 inches from April to September inclusive, very well distributed throughout the growing period. There were no frosts after the 17th May and the first fall frost to kill tender crops at this Station was on the 2nd October. There were no heavy windstorms to cause damage to crops. The hay and cereal crops were well above the average. The harvesting weather was not entirely satisfactory because of very frequent rains which delayed grain harvesting very much.

The corn crop was the best ever harvested, the average of one 8-acre field being 18 tons 1,620 pounds per acre. The Longfellow variety has proven the most satisfactory. The total corn ensilage harvested amounted to 255 tons. Eight acres in clover yielded 25 tons 550 pounds, and the second crop on this area produced 960 pounds of clover seed. The total hay secured amounted to 135 tons and this, with the corn, furnished the roughage required for the Station stock. Twelve acres of Banner oats yielded 753 bushels or at the rate of nearly 63 bushels per acre. The total grain harvested was 1,352 bushels. Four and one-half tons of turnip seed were also grown.

An average of 50 head of dual-purpose Shorthorns were carried during the year. These have made some very good records. Hedgyn Susan has averaged, for four lactation periods, 7,711·6 pounds of milk for a lactation period averaging 301 days and an average dry period of 50 days. The milk tested slightly over 4 per cent of fat. The average profit per lactation period above cost of feed

was $78.96. Twenty steers were also carried in a feeding test during the winter. These made little profit above cost of feed.

In poultry, the White Wyandotte and Barred Plymouth Rock only are kept. These have made good profits during the winter. One pen of Wyandotte pullets averaged 62·27 eggs, and a pen of Barred Rocks averaged 60·46 eggs each for the months of January, February and March.

The apiary work has been extended from 21 to 36 colonies of bees. The average yield of honey was 122·8 pounds per colony. The highest yield from one colony was 316 pounds. The average production per colony was worth $29.30.

Experiments to determine the value of limestone were continued during the year. For a period of six years the value of the crop from an acre area on which ground limestone at the rate of 2 tons per acre was used in the first and third years, was $479.17, and on that not limed but otherwise fertilized and cropped in a similar way was $410.17, a gain of $69 per acre from the use of 4 tons of limestone, costing for material and application, $16.80. Various fertilizer tests on field and orchard crops were also made.

The fruit crop on the whole was good. A heavy frost on the 20th October injured fruit not harvested at that date, resulting in some cases in much loss to the growers. The prices received for fruit exported were low and this, together with the high prices paid for barrels and high wages paid labour for harvesting, resulted in little profit from the orchard areas.

In order to aid in the carrying on of training work for returned men who wished to engage in agriculture, an adjacent farm of 130 acres was purchased, and on this, men in training were given a practical training course under the direction of the Soldier Settlement Board. The men were housed in buildings on the Station property, the tools, implements and teams from which were placed at their disposal for this work.

Experimental Farm, Nappan, N.S.

The freeze-up for winter came on November 17, 1918, but winter itself was mild throughout with very little snow on the ground at any one time. The weather through April, 1919, was very backward, a normal mean average temperature prevailed throughout May with an occasional shower. Owing to the fact that very little fall ploughing was accomplished in the fall of 1918, seeding operations were late. June and July were good growing months, but August weather was most unfavourable for hay-making, rainfall being recorded on thirteen different days during the month. September was normal in respect to temperature but lacked sunshine. October was a normal month but November was characterized by heavy gales and a precipitation of 5·69 inches. The total precipitation for the year from January 1, 1919, to December 31, 1919, was 33·42 inches. Notwithstanding the unfavourable weather conditions, most crops were harvested in fairly good condition at the Farm.

There was a good increase in live stock kept at the Farm during the year, especially in cows and sheep. Twenty-three head of beef steers were fattened during the winter.

The poultry work was extended and in November, 1919, an egg-laying contest was started, with twenty entries of ten birds each, and to date very encouraging results have been obtained, approximately nine thousand eggs having been laid by the two hundred birds.

The season was not very favourable for honey production, only five hundred and ninety-nine pounds of extracted honey being produced from seven colonies, spring count.

All grain, except mixed grain, was below the average. Oats yielded from 39 to 46 bushels per acre, wheat, 15 to 16½ per acre; barley from 16 to 23 bushels per acre; buckwheat from 13½ to 16¾ bushels per acre; corn gave an average yield of 12 tons, 1,192 pounds per acre; mixed grain, 44 bushels per acre. Hay both on the upland and marsh showed an increase over the previous season. The range in yield on upland was from 1 ton, 1,400 pounds to 2 tons, 108 pounds, while the marsh land ran from 1 ton, 675 pounds to 1 ton, 836 pounds. The total hay cut was 325 tons, 440 pounds. Owing to unfavourable conditions the quality was only fair.

Roots were very poor, the season being most unfavourable, consequently the yield was below the average, being only 508¼ bushels to the acre.

Liming experiments go to show that ground lime stone will increase the production on our average soils.

The apple crop was above the average for most varieties. Strawberries were just an average crop, there being much winter killing. Bush fruits were fair, gooseberries and raspberries falling below the average.

The season was a poor one for potato production; the range in yields ran from 136 bushels, 40 pounds, to 433 bushels, 20 pounds, per acre. Dry rot was much in evidence.

Some four acres of Monarch turnip stecklings were grown and pitted and 1,500 pounds of seed was produced.

The necessary general repairs to all buildings were carried out and the roof of the bull and calf barn was shingled. A new farm cottage, 26 by 33 was built. An addition 30 by 33 was built on the old house at the creamery and the whole divided and made into a double house. Ten new colony houses were built for the contest work. Some 2,000 feet of woven wire fence was erected during the season.

The split-log drag was used, not only on the Farm roads but on the roads leading from the Farm to Maccan and Nappan stations.

Agricultural meetings and exhibitions were attended by the superintendent and assistant to the superintendent and many excursions visited the farm during the year.

Experimental Station, Ste-anne de la Pocatière, Que.

The spring of 1919 was late and wet, which kept back seeding operations until the middle of May. Precipitation was sufficient during the growing season and the weather was warmer than in preceding years. This resulted in a very rapid growth and complete maturity of all the cereal crops, and also made possible an abundant harvest of roots. The crops of small fruits were light, but on the contrary the apple crop was a very good one. Both native and European trees and also pear trees were severely injured by the winter of 1919, about one-half being totally destroyed by winter killing and the other half very seriously affected. The crops, therefore, of these fruits were practically nothing in 1919.

The work with rotations, cultural methods, cost of production, test of suitability of varieties, etc., etc., was continued as in previous years. Tests of varieties of cereals, forage plants, vegetable crops and fruits were also carried on, as well as a number of experiments on the value of insecticides on the various crops.

Nineteen horses were on hand, including eight Percheron mares and one Percheron stallion, these doing the work of the Farm, and considerable breeding with them is also being carried on. Interesting figures are being collected on the cost of raising colts, comparison of feeds, methods of housing, etc. The dairy herd of pure-bred and grade Ayrshires is gradually increasing year by

year and improving in quality. Figures are being gathered as to the cost of raising animals to a productive age, also experiments in feeding, care and management are conducted. Yorkshire swine are kept, the work so far being confined to feeding experiments. A flock of Shropshire sheep is now being formed. With the bees, experiments are being carried on in different methods of wintering. The work with poultry is just commencing. The flock is being brought up in numbers so that various tests and comparisons may be carried on.

A considerable amount of work in farm improvement was done during the year, such as work on the roads, gathering stone from the fields, drainage, etc., as well as repairs to certain of the buildings.

An exhibit was made in seven fields in the district during the year. Three excursions were held to the Station and a number of farmers' gatherings were addressed by the superintendent.

Experimental Station, Cap Rouge, Que.

The season.—The growing season, May to October, inclusive, in central Quebec, was warmer, dryer and duller than the average for the past seven years, the figures being, respectively, 57·48 and 56·27 degrees F. for the mean temperature, 25·43 and 25·87 inches for the precipitation, 1,123·5 and 1,404·3 hours for the sunshine. Corn and hay were better than usual, while swedes were very poor. Potatoes were good and so was grain, except peas, which were only medium. The fruit crop was fair, with the exception of cherries which did not yield anything. Vegetables were extra, except roots, which were a poor crop.

Live Stock.—A new Horse Farm was started, on a leased property of 450 acres, with thirty French-Canadian brood mares. Three more French-Canadian heifers went through the Record of Performance, which gives Cap Rouge the distinction of having more qualified females than any other herd in existence. The flock of Leicesters, numbering about one hundred head at the end of the fiscal year, is the largest in the province. The egg-laying contest for Quebec is located at this Station and the two hundred birds are doing well. Experimental work with different kinds of stores for wintering bees was continued.

Crops.—Very interesting data were gathered, as to cost of production, comparison of rotations, rates of seeding, spring versus autumn ploughing for corn, etc. Variety tests of forage plants and cereals were made, seed produced for distribution and sale, and the isolation of good strains continued.

Fertilizers.—A project was started to test the influence of phosphoric acid in promoting the maturity of corn. Burnt lime as compared with ground lime stone on large areas, which seem to promise better results than on small plots.

Horticulture.—The orchards at Cap Rouge are now the most extensive in the province of Quebec, as the only two larger ones lost a great many trees in 1917-1918 while very few died here. There were 71 different projects with vegetables, which consisted of cultural experiments, breeding, and variety tests. Some of the seed produced at Cap Rouge, of tomatoes, for instance, has been distributed, on request, to every province of the Dominion and even to the Yukon Territory. In 1919, 680 different varieties of flowering plants and ornamental shrubs were tested.

Miscellaneous.—A good horticultural barn, with an underground but well ventilated modern cellar divided into six different compartments, was completed An exhibit of Station products was made at five different points and three diplomas were received. The correspondence and the number of visitors increased about 25 per cent, compared with the previous year, which shows that farmers take more and more interest in the work of the Station.

Experimental Station, Lennoxville, Que.

Ploughing was commenced on April 19 and seeding on May 8. The very mild winter of 1918-19 was very beneficial to the clover crop; the first cutting, which was saved for hay, was commenced June 20. The second cutting started August 15, and was put into the silo, in which it conserved very nicely and made the best of feed for all live stock. The season was also very favourable for grain and the corn crop.

The Ayrshire dairy herd has had a very good natural increase this year. The herd at present comprises 38 head, and 7 females qualified in the official Record of Performance. The work with this herd consists in ascertaining the actual cost of milk production, the cost of rearing calves and yearlings on different feeds.

A new sheep barn was erected at this Station, 24 by 74 feet, which accommodates a flock of 60 registered and grade Oxford Downs.

One hundred and eight thousand feet of under-drainage was done this year; 350 rods of permanent fencing was erected, and the farm road of 3,457 feet was completed on the east boundary of the Farm.

The poultry plant now in operation consists of an administration building, two permanent houses, 16 by 32, for the accommodation of 200 hens, and 5 colony houses. The work is with the Barred Plymouth Rock breed, all of which are trap-nested with the object of improving production as much as possible and to demonstrate the increased revenue which may be derived from birds of the best laying strains.

Experimental Station, La Ferme, Que.

The spring of 1919 was warmer and drier than that of the preceding year. Snow had completely disappeared by May 1. May and June were warm, with little rainfall—conditions favourable to sowing but too dry for good growth. On June 22 and 28 heavy frosts did a great deal of damage. July and August were hot, with a good rainfall, which saved the crops. September was cold and wet, and harvesting was difficult; there was a heavy frost on the 10th. October also was cold and wet.

The hay and grain crops were below average but forage crops and vegetables yielded well.

The dairy herd is made up of some grades headed by an Ayrshire bull. A flock of common sheep with a Cheviot ram, has been established and has aided greatly in clearing away undergrowth. The herd of swine is made up of 30 Yorkshires, from which demands for breeders have been met.

During the season 25 acres were cleared and 10 acres stumped and broken; 2 miles of fencing was put up round the Farm boundaries; work was done on the Farm roads and on the highway, also on the extension of the water system, gathering stone, surface drainage, etc.

A boarding-house and two cottages have been erected for the employees, and a stable has also been built.

Experimental Station, Kapuskasing, Ont.

The months of April and May, 1919, were the most favourable for farm work that have been seen at this Station since it was opened. Seeding operations commenced May 17 and warm weather with local showers following directly after seeding caused a rapid germination of all seed. Rapid growth continued until the middle of July, when all crops were seriously checked by drought which continued until the latter part of August. From September until winter set in it might be said that there was a continual rainstorm.

Fall wheat yielded 30 bushels per acre; Ruby wheat matured and yielded 26 bushels per acre; Marquis wheat, Prelude and Huron matured, yet, owing to extreme wet weather, the three last-named varieties could not be successfully harvested.

The hay crop was light, yet of excellent quality and was harvested in good condition. A second crop of clover was taken from some of the land, and was cut and used for ensilage.

Peas, oats and vetch grown for ensilage purposes were successfully harvested, yet the extremely wet weather during the fall months made the harvesting of this crop most difficult.

Potatoes, turnips and mangels gave an exceptionally fine yield. Some trouble was encountered with cutworms that attacked the mangels.

A very successful year may be reported in connection with all branches of horticultural work.

A start was made with bees, two colonies being supplied by the Central Experimental Farm, Ottawa.

Sixteen horses were kept at the station during the year. The dairy herd of grade Holstein and Ayrshire cows did well, the milk record being satisfactory. Satisfactory results are being obtained in the grading up of the herd.

The Shorthorn herd of beef cattle have, during the past year, given good results, an exceptionally fine lot of calves having been reared.

Results from the sheep flock were not satisfactory, from 19 lambs born from 12 ewes, 7 only were successfully reared.

A very successful year can be reported in swine husbandry, 52 young pigs being reared from 5 registered Yorkshire sows.

The farm boardinghouse was completed and affords excellent accommodation for farm help.

An implement shed was built, containing a carpenter and blacksmith shop.

A combined dairy and ice-house was built.

All farm buildings were painted during the past summer, adding greatly to the appearance of the Station.

One mile of roads was graded; 80 acres of new land were summer fallowed; 50 acres sown in fall wheat.

Seventy acres were cleared of timber during the winter of 1919-20.

Five hundred cords of pulpwood were taken from the land, this being cut in connection with land-clearing operations. In addition to the pulpwood there were 70,775 feet of spruce, poplar and balm of Gilead obtained from the Station's property.

A 230-gallon-capacity coal-oil tank was installed.

Experimental Station, Morden, Manitoba.

The winter of 1918-19 was exceedingly mild, and the snow not deep at any time. The spring opened late, however. Early working of the land was out of the question, for the soil remained cold and sodden. The summer was one of the hottest on record. Many hot weather plants, such as melons and corn, ripened in the open. The winter of 1919-20 began on the 9th of October, and continued very cold with deep snow until the end of the fiscal year, March 31.

Horticulture is the main line of work at this Station. Probably there is at Morden the largest collection of hardy fruit trees to be found anywhere in Canada. The entire horticultural area of 90 acres was occupied with either fruit trees or garden in the summer of 1919. Much attention has been given the fruit industry in the hope of building up strains of fruit trees sufficiently hardy to withstand the rigorous prairie winter. The attempt has been made

along three lines of endeavour, namely: *First:* The sifting out of all standard material which have in them hardy blood. *Second:* The crossing of certain standards with hardy crab-apple stock from Siberia and other northern regions. *Third:* Seedlings arising from the most hardy varieties known. From among this mass of material it is hoped to find varieties suitable to prairie conditions.

Experimental work has been carried on with the feeding of steers along similar lines to that carried on by other Farms and Stations, namely: Outside versus inside feeding; most profitable method of feeding; proper time to put on the market, and similar problems. The grading up work with sheep has been continued. Much improvement in the progeny has been noticed over that of the original range ewes, by crossing with pure-bred Hampshires. Fleeces are obtained from these grades weighing about ten pounds on the average.

Most excellent crops of timothy and clover were obtained as well as of Western rye grass. Some ten or twelve acres of rye grass were threshed for seed. It was found that the seed alone was worth more on the wholesale market than the hay would have been worth, if sold as such.

Some twenty acres of potatoes were grown at the Station, of the Irish Cobbler and Early Ohio varieties. These varieties yield well at Morden, and attract much attention. Large quantities of beans and peas were planted and show the possibilities of these crops in southern Manitoba.

Some progress has been made in the building operations. All of the machinery is now housed, and the sheep comfortably located in new quarters. The superintendent's house is nearing completion, and, though small, is well built and well situated.

Some twenty acres of land were purchased during the year, together with the buildings thereon. This will permit the opening up of the Farm from the village, and the beautifying of the grounds. The building of roads and preparation of this land will receive considerable attention during the coming season.

Experimental Farm, Brandon, Man.

Spring conditions were about normal at Brandon in 1919. The seeding began on April 22 and was completed in good time. Crop prospects up to the middle of July were unusually good, but rust and extreme heat, with winds, reduced the yield considerably below what the growth of straw indicated. However, even with this reduction, there was a fairly good crop of grain. Hay crops were light but corn was an exceptionally fine crop, producing a good grade of fodder and quite a considerable amount of ripe seed.

Records of feed consumed by all classes of live stock have been kept and figures on the cost of production and maintenance of all types of live stock kept on the farm are available.

Breeding operations with Clydesdale horses have been continued. Three colts of this breed were raised and four mares bred for next year.

The dual purpose Shorthorn herd of cattle has increased in size and improved in uniformity. Several cows qualified for Record of Performance. Bull calves of this breeding were supplied to Manitoba farmers, but the supply was not equal to the demand for them.

Experiments in steer feeding to test the value of recleaned elevator screenings (Standard Stock Food) resulted in this feed giving much better results when mixed with bran than were obtained from oat chop. A test of sunflower silage indicated a feeding value equal to that of corn silage.

Breeding operations with Yorkshire and Berkshire swine have been continued. Experiments in hog pasturing have shown the possibility of materially reducing the cost of pork production by the use of pasture. Feeding experiments

with recleaned elevator screenings have confirmed the results of former tests, proving the great value of this feed. Experiments in the housing of swine have been continued.

In sheep breeding, work with the Oxford Down breed has been continued, also a comparison of the use of Oxford Down, Shropshire and Suffolk rams on a grade flock of ewes.

Breeding operations with poultry have been continued with the Barred Rock and White Wyandotte breeds. By trap-nesting and breeding from the best layers, very useful egg-laying strains are being developed. One Barred Rock pullet laid 248 eggs in her first year and a pen of 25 hens averaged 198 eggs all round. A new poultry house was built to continue the testing of styles of houses. An egg-laying contest was started. Twenty pens were entered by Manitoba breeders. The contest started November 1st and is to be continued for the year.

The usual variety tests of cereals and forage crops have been made this year and data are available on the results obtained. Cultural experiments to bring out information on the best methods of conducting farm operations of all kinds have also been conducted, and much information has been accumulated. Sunflowers for silage were grown for the first time with good results.

The eight crop rotations which occupy the major portion of the farm land were continued and results from year to year are compiled and made available for the public.

Very full tests of varieties of vegetables were made and also some tests of cultural methods. Remarkable success in the ripening of tomatoes has been attained at this Station. The flowers, hedges and ornamental shrubs and trees continued to be a demonstration of the possibilities of home decoration and shelter under prairie conditions.

A farmers' picnic was held on July 8, but was not so well attended as on the previous occasion on account of bad weather and roads. Many others visited the Farm during the year.

Experimental Farm, Indian Head, Sask.

The season of 1919 was abnormal in many respects. Seeding commenced on the 19th of April and was general by the 21st. At the end of May the crops were very promising. A period of hot weather, high winds and drouth followed, which cut down the yield of all crops considerably. The fall was very open until October 1, when a very heavy frost was experienced and winter set in almost immediately without any break in the cold weather. Grains were a fair crop but forage crops of all kinds were very light. The potato crop generally was badly hit by the early freeze-up.

LIVE STOCK.

Horses.

There are thirty horses on the farm and of these sixteen are pure-bred Clydesdales and the remainder are work horses and grade colts. Three pure-bred foals were raised during the year and two of them are very promising.

The cost of feeding a horse which is worked the entire year was found to be $180.90 at present prices of feed. The cost of feeding a colt from weaning to three years was $159.35.

Cattle.

Shorthorns.—The herd numbers seventy-two consisting of three stock bulls, eight bull calves and sixty-one females. Of these six females and one bull were purchased at the Dryden Miller sale of imported Shorthorns and by careful

selection it should be possible to build up a very high class herd. Care will be taken, however, to retain the good milking qualities which the herd already possesses.

There is a very good market for all surplus stock at good prices.

An experiment was conducted during the winter to determine the feeding value of sunflower silage for milch cows as compared with corn silage. The results obtained show that the palatability and feeding value of the sunflower silage is fully equal to that of corn, the only limiting factor being the very stimulating effect the sunflower had on the kidneys.

The cost of feeding a cow during the lactation period has been found to vary from $79.93 to $134.74, depending on her milk production. The cost of raising a calf to one year was $70.35; from one to two years the cost was $42.50.

Grade Cattle.—Twenty steers were purchased for experimental feeding in the fall of 1919: They were divided into two equal lots and used to compare the feeding value of recleaned screenings (Standard Stock Feed) as compared with barley as the main grain ration for finishing steers. The barley showed superior gains and a lower cost per pound gain. The steers on barley made an average daily gain of 1·68 pounds at a cost of 17·02 cents per pound, and the ones fed on screenings made an average daily gain of 1·37 pounds at a cost of 18·79 cents per pound gain.

Sheep.—At present there is a flock of one hundred and eleven sheep, of which number thirty-nine are pure-bred Shropshires and the remainder grades with the exception of a pure-bred Oxford ram.

The grading up experiment has been continued using Shropshires and Oxford rams on range ewes and the results have been uniformly good, the second and third cross ewes closely resembling pure-breds in type, and the weight of wool being increased from five and one-half to ten pounds per ewe.

The cost of feeding a ewe for one year was found to be $9.93, and of raising a lamb from weaning to two years was $13.92.

Swine.—The swine herd is twenty-four in number and consists of one Yorkshire boar and ten sows, one Berkshire boar and two sows and ten feeders.

Owing to the peculiarities of the season the pasture experiments with swine were a failure and no results were obtained. The cost of maintaining a sow for one year was found to be $28.34 and for raising a young sow from weaning to one year was $23.59.

POULTRY.

Two breeds of poultry are kept on the farm, namely, Barred Plymouth Rocks and White Wyandottes. Special attention has been paid to egg production and utility type, all birds being trap-nested. The average egg production of the birds retained in the breeding flock was 172 eggs in one year. The value of these eggs at prevailing prices was $6.04 and the feed cost $2.30, leaving a profit per bird of $3.74.

A laying contest was commenced during the year, twenty pens being entered by various breeders in the province. The birds will be trap-nested throughout the year and all birds laying over one hundred and fifty eggs recorded in the Record of Performance for poultry. Some of the pens are laying very well.

FIELD HUSBANDRY.

In field husbandry the work with rotations and cultural methods was continued, and also the variety test work with cereals and forage plants. Corn was a fairly good crop of excellent quality. Roots were a fair crop. Hay mixtures containing alfalfa gave comparatively high yields.

Small fruits yielded fairly well. Variety and cultural tests were continued with these and with vegetables.

BUILDINGS.

Twenty new colony houses for poultry were constructed during the year. Ten of these were used to house the laying contest and the remainder for housing our increased flock.

EXHIBITION AND VISITORS.

Exhibits of live stock and poultry were made at the Regina summer and winter fairs, the Swift Current poultry show and the Sintaluta fair. At the Regina summer fair, the only show to which a competitive exhibit was sent, one Clydesdale mare was Canadian-bred champion and another reserve grand champion.

Experimental Station, Rosthern, Sask.

The season of 1919 was characterized by lack of moisture, high winds and drifting soil, which worked disastrously on grain and hay crops and most of the hoed crops. These conditions left a serious feed shortage not only for the Station but for the whole province. The field experiments were so ruined that no reliable results could be deduced from variety tests nor from cultural methods. With respect to soil drifting it was found that soil that had been heavily manured within the past six years, or which had not been longer than six years from sod did not drift, and that the effect of a windbreak was such as to protect the soil from drifting for a distance of fifty feet for every foot in height of the windbreak.

The garden was the best it has ever been, due, no doubt, to repeated heavy applications of manure for the past eight years and to effective windbreaks.

There were three colts raised last season and one mare died, leaving on the Station sixteen horses, two two-year-old colts and three yearlings.

The cattle at the Station consist of 12 pure-bred Holsteins and 12 grade Shorthorns. The flock of grade sheep is kept down to approximately one hundred and by the use of pure-bred Leicester rams is much superior to what it was in 1915. The gross sales of wool, pelts and mutton for the past four years amounted to $4,659.

From 10 brood sows there were raised 68 pigs to maturity. These were on an experiment in which the self-feeder showed up to good advantage.

A start was made in poultry in 1919 by obtaining eggs of a bred-to-lay strain of Plymouth Rocks from Indian Head Experimental Farm. From about three hundred hatched there were 128 pullets selected as a foundation flock. There were six colony houses and two permanent hen-houses built.

Experimental Station, Scott, Sask.

The season of 1919 was unusually warm with insufficient rain during the early summer months. There was only a total of 3·33 inches of rain from April 1 to July 31, and following two dry seasons, crop yields were light. There was practically no damage from soil drifting on the Station and little in the immediate vicinity, but in many districts there were serious losses from this cause.

Gathering data on the cost of horse labour and cost of feeding horses has been continued. A steer feeding experiment showed sunflower ensilage to be worth $13.81 per ton when used in feeding steers. The sheep have again shown substantial profits, averaging 9½ pounds of wool and 1¼ lambs per ewe for the hundred breeding ewes. Notwithstanding the high cost of feeds, swine feeding experiments have shown profits. A comparison of the self-feeder with the open-trough method of feeding has been continued and the value of pasture for swine is being determined.

The work with poultry has included a comparison of hens with pullets for egg production and fertility of the eggs. Barred Rock and Orpington breeds have been compared, and hot-water and hot-air incubators have been tried out.

The value of the crops from the several rotations has again been determined. In the soil cultural experiments some interesting data on the best methods of seeding down and the value of the soil packer have been secured. Rates and dates of seeding have shown early seeding and light seeding the most profitable for seasons such as the past.

The yields of cereals were low but the sample harvested was fairly good. Later maturing varieties such as Red Fife and Kitchener wheats and Banner oats gave the best yields. Red Fife withstood the spring frosts with less damage than any other variety. Hannchen barley and Prussian Blue peas gave good returns for the season. This is the first year the former has been tried out on this Station. Flax was thinned out by early June frosts and yields from fall rye were decreased from frost damage while the rye was in the flowering stage. Spring rye gave good returns.

Considerable attention has been given to forage crop experiments. A new set of tests of grasses and clover plants was started. A small field of sweet clover was sown and an experiment to determine the possibility of sowing sweet clover with a nurse crop started. Silage crops grown included sunflowers, oats and corn.

Extensive tests of strains of field roots were made. Varieties recommended and sold by the several western seed firms were grown in the tests and compared with roots grown from seed raised on the Experimental Farms' system.

A number of native plums planted in 1914 bore their first fruit this season. Small fruits gave promise in the early spring of an abundant crop, but about fifty per cent of the flowers were frozen just as the fruit was setting. Vegetables gave good returns and the potato crop an average yield, but, owing to the rains coming late, the tubers were unshapely and immature.

During the year a poultry-house, piggery and silo were erected. An exhibit was shown at a number of the summer fairs.

Experimental Station, Lethbridge, Alta.

The season of 1919 was the driest ever experienced in the Lethbridge district since meteorological records have been kept or since farming has been attempted. The total precipitation from April 1 to July 31 was only 3·84 inches. The first work on the land was done April 2. Grain crops were seeded in good season and made a nice start but the dry May, followed by a warm June and July, when hot dry winds were prevalent, made satisfactory growth impossible. All crops on dry land were a practical failure; even grain sown on summer-fallowed land in many cases did not develop sufficiently to make harvesting possible.

Keen interest has been developed in irrigation throughout the southern part of the province due to the three very dry seasons just passed, in consequence of which the superintendent attended many farmers' gatherings and addressed them on questions connected with irrigation.

As usual, most of the field experimental work was conducted in duplicate on the irrigated and non-irrigated parts of the Station. On the former the yields of all crops were satisfactory. The yields of alfalfa hay were particularly good on account of the hot weather during the long, dry season. The highest yield of wheat was the "Pioneer," 52 bushels, 30 pounds per acre; "Danish Island" oats gave 163 bushels, 30 pounds per acre; "Bark's" barley gave 101 bushels 12 pounds per acre. "Golden Vine" peas gave 28 bushels per acre. All classes of forage crops produced well on the irrigated part of the Station but were a

failure on the non-irrigated part. Sunflowers made a particularly good showing and demonstrated the possibility of getting a large and satisfactory tonnage from this new forage plant.

The tests of the carrying capacity of different pasture grasses and mixtures on the irrigated land were continued. From the flock of 98 ewes 132 lambs were reared and cost data on the same were obtained. Four of the work mares foaled.

Tests carried out indicated that April was the best month to hatch pullets for winter layers. Trap-nesting of all the pullet stock was continued. Out of 150, thirty-eight produced over 200 eggs for the year and 90 of them produced over 150. In the spring of 1919 there were hatched 915 chicks. All the better cockerels were disposed of to farmers for breeding purposes and the demand, as usual, was greater than the supply. During the four winter months of 1919-20 the best pen of 55 pullets averaged over 70 eggs each; several of them produced over 100 during this period. The cost of production was twenty-five cents per dozen with feed at prevailing prices. A laying contest was begun November 1, eleven pens being entered.

The work carried on with bees during the past year was quite successful. Two colonies were wintered in a "dug-out" cellar and came out in excellent condition. Two 2-pound packages of bees from Alabama were received May 10. One of the wintered colonies and one of the purchased ones were used for division to increase the number of stands. The other two colonies were used for honey production, 407 pounds of extracted honey being obtained from the wintered one and 281 pounds from the colony made up from the 2-pound package of live bees. The two colonies used for division produced five strong colonies before winter set in besides yielding 152 pounds of extracted honey. The season's returns, confirming previous tests, indicate the excellent possibilities of profit in beekeeping in the alfalfa-growing districts in southern Alberta.

A fair quantity of crabapples was produced on some of Dr. Saunder's cross-bred varieties. A large number of plum trees bore fruit, these being all selected seedlings of the native plums of Manitoba. The vegetable garden on the irrigated land produced well, but on the non-irrigated land the results were disappointing. All ornamental trees and shrubs wintered well.

Experimental Station, Lacombe, Alberta.

The first seeding done in the season of 1919 at this Station was on April 19. A moderate amount of moisture had been supplied to the soil by light rains, and a snowfall in early May, while delaying seeding, supplied further moisture. The summer was exceptionally dry, especially during the months of June and July, and the precipitation, which totalled 16·683 inches, fell, for the greater part, out of the growing season. Consequently the usual rank growth of straw and hay was not secured, but average yields of grain were obtained. Unfortunately, winter set in on October 20, before many farmers had any fall ploughing done, and has been an exceptionally trying one on the live stock.

No experimental feeding was done with horses, but records of costs were kept. Idle horses were wintered very successfully outside in the shelter of trees, with a supply of good prairie hay and oat sheaves. The cost per head per day to winter was 26·9 cents.

The dairy herd is now composed of 36 pure-bred Holsteins and 18 grade Holsteins. The average record of milk production was 7,939·9 pounds per cow. A good quality Cheddar cheese was manufactured, which brought the average return per cow to $216.54.

The beef herd, which comprises 47 pure-bred Angus and 7 grades, has made a satisfactory showing during the year. Many good individuals are

included in this herd, and an 18-months-old steer won first in his class and reserve championship at the Alberta Winter Fair, Calgary.

The second year's work in the grading-up experiment with sheep was most successful. Rams of Shropshire, Oxford, Hampshire, Leicester, Cheviot and Corriedale breeding were bred to common grade ewes. The progeny, both lambs and shearlings, were carefully weighed, wool samples taken and graded, and the weights of the fleeces recorded.

Feeding tests with Yorkshire, Berkshire and Duroc Jersey swine were carried on as well as experiments with self-feeders and various pastures. Alfalfa, rape, oats and fall rye pastures gave good returns in the form of pork. The cost of carrying a mature sow over the winter was found to be $3.90 per month.

A very successful year with poultry was experienced, the chickens hatching out well, and the demand for stock and eggs was keen. Trap-nesting was carried on, and the cost of egg production recorded.

The season was not altogether favourable for honey production, owing to a scarcity of honey plants, but an average yield of 64 pounds of honey from each hive was obtained.

Records of costs and returns were tabulated from four different rotations. Experiments with various cultural operations, varieties of grain, and hay and pasture mixtures were conducted on over 650 plots. Marquis wheat yielded 45 bushels 10 pounds per acre, while Ruby Ottawa 623 yielded 43 bushels. Banner oats, with a yield of 114 bushels 24 pounds per acre, stood first in the list, as it also does in a five-year average. Victory held second place. Barks barley, yielding 76 bushels 42 pounds, held its usual premier position. Grass plots sown either in mixtures or singly to timothy, Western rye grass, Awnless Brome, Meadow Fescue, Kentucky Blue grass and alfalfa gave the best returns. Heavy yields of oats for ensilage, and of sunflowers were put into the silos in good shape. The root crop was a failure, owing to the dry season and cutworm attacks.

Small fruits yielded well, and a few plums and apples set on new trees in the orchard. A good crop of hardy vegetables was harvested. The annual and perennial flower borders, hedges and trees were much commented upon by the numerous visitors.

Experimental Station, Summerland, B.C.

The season of 1919 was most unfavourable to plant growth. The spring was cold, rainfall very low, and water could not be turned on in the municipal ditches until May 15 owing to repairs which had to be carried out after the frost had gone.

Comparative tests were made in feeding a herd of 25 beef cattle in three pens of 7 each and 4 stall fed. All made excellent gains and fair profits. Experimental feeding was also carried on with sheep and swine. The year was fairly successful in the divisions of poultry and bees.

The fruit trees made slightly less growth than desirable owing to insufficient moisture; in seed production, owing to the same reason, some of the plants failed to mature their seed. Some good work was done in the selection of pepper, tomato and cucumber seed.

The yields in the division of cereals were low, the straw was short and the grain in many instances was small and shrivelled. In the division of forage plants good progress was made during the year. Tests of varieties of mangels, corn and various other plants were carried out.

During the year a foreman's cottage and a boarding-house have been erected, also a log-shelter for visitors. An exhibit was shown at eight of the provincial fairs during the year.

Experimental Station, Invermere, B.C.

The past season has been rather an unusual one in that practically every month had extremes one way or the other. On the whole there was considerably less rainfall during the growing season than any previous season since the Station was started. The ground was in good condition when the seeds were sown, but growth was relatively slow, as May and June were quite cool, there being three frosts in June. Early in August there was a heavy rainfall which helped the crops materially and brought them along to harvest.

No experimental work with horses or cattle has yet been undertaken, but some figures on wintering brood sows are being collected.

In field husbandry some very creditable results have been obtained on the irrigated rotations, while on the dry land the crops were a failure. Mangels, sugar-beets and carrots were severely damaged by the cutworms. Alfalfa, clover and the grasses gave large yields.

Excellent results were obtained with the cereals this past season and field peas gave record yields, the average yield per acre of the five varieties under test being over 60 bushels. Prussian Blue variety was the highest, with 89 bushels per acre.

Horticultural work is progressing very favourably. A large number of varieties of vegetables and flowers are being tried out. Bush fruits gave a high yield and some of the young apple trees promise well. Potatoes did remarkably well, ten varieties yielding from 20 to 25 tons per acre.

On the poultry plant, Barred Rocks, White Wyandottes, and turkeys are kept. Pedigree trap-nesting and breeding are carried on. Last year a small pen of Wyandottes laid an average of 227·7 eggs per hen and showed a profit over feed of $6.32, while a pen of 50 Rocks gave a profit of $3.45 per bird. The demand for stock and eggs was greater than the supply.

In the apiary, seven colonies came through the winter of 1918-19, and during the season produced an average of 126·4 pounds of extracted honey, the largest yield from one colony being 234 pounds. During the season the seven colonies were increased to eleven, and on March 23, 1920, when they were examined, they had come through the winter successfully.

An exhibit was shown at six provincial fall fairs during the season and attracted considerable attention and favourable comment.

Experimental Farm, Agassiz, B.C.

The months of April and May, 1919, were cool, damp and cloudy, resulting in an unusually late spring. Very little work on the land was accomplished in April and when the seed was finally sown the cool temperatures retarded growth. Up to the end of June hay and pasture crops did remarkably well under these conditions but cereal, corn, root and potato crops were late. Following the late spring came a very dry summer so that although the first crop of hay yielded exceptionally well and was saved in excellent condition, the second crop of hay and the late pastures were poor. The cereal crop ripened too rapidly for heavy yields. Owing to dryness the root and potato crops were light. In many districts an early frost injured the fodder corn.

A very nice group of Clydesdale females, consisting of four mature mares, three yearling fillies, and one filly foal, is on hand. There are also ten grade Clydesdales and a driver. Figures on the cost of horse maintenance are being compiled.

Because of the shortage of accommodation, the size of the dairy herd has not been increased. The herd numbers 72 head; 49 of these are pure-bred and 23 grade Holsteins. Some very nice long-distance records were completed. Agassiz Pietje Korndyke was the best four-year-old, her sister Agassiz Priscilla

Korndyke the best three-year-old, and Aurora Mechthilde the seventh prize mature cow in the Holstein Record of Performance. These three females won more R. O. P. prize money last year than any other herd in Canada. It is gratifying to note that the herd has passed the seventh year without a reaction to tuberculosis. The experimental feeding and the manufacture of cheese have followed much the same course as that of last year.

The flock of Dorset Horned and grade sheep is giving good results. Ten lambs, the oldest one born January 12, were sold the last of March for the Easter market. They brought $17.60 each. This branch of the sheep business promises a bright future. Eighty-one fleeces, totalling 647 pounds, were sold for 53 cents per pound.

With swine, the experimental work consisted of comparisons of the self-feeder with trough-feeding and varying quantities of skim-milk against no milk and milk substitutes.

To produce 100 pounds of pork the trough-feeding method cost slightly more than that of self-feeding and, when the labour question is considered, the advantage of the self-feeder may be still further emphasized.

In the feeding of varying quantities of skim-milk, the most profitable returns were obtained from pigs fed at the rate of 8 pounds of skim-milk per pig per day added to a ration of 1 part oats, 2 parts screenings and 3 parts shorts. Others fed 6 pounds skim-milk each per day added to the same standard ration came second in order of profit, while those fed 10 per cent tankage added to same standard ration proved tankage to be a valuable substitute for skim-milk when fed at this rate but not if fed at as high a rate as 20 per cent. Satisfactory results were not obtained when feeding the above standard ration with neither skim-milk nor substitutes.

In the poultry department three varieties are kept, Barred Plymouth Rocks, White Wyandottes and White Leghorns. Several of the pullets of each variety laid over 200 eggs during the year. Plenty of green feed in the form of kale, rape and mangels fed in the fall and early winter proved of great value in the ration for producing winter eggs.

Work in the forage crop section consisted of growing seven acres of mangel seed besides testing 37 plots of mangels, 24 of carrots, 4 of sugar-beets and 12 of fodder corn. In cereal work 13 varieties of barley, 10 of oats, 6 of peas and some mixtures were grown.

In the orchard plums and cherries gave a very heavy crop but apples and pears only a small crop and that indifferent in quality. Small fruits yielded heavily. All vegetable crops were fair and the roses and other flowers were excellent.

A new horse barn, also a new office were erected. Underbrushing the remaining uncleared area on the east side of the Farm was completed. Four acres of land that had previously been underbrushed were stumped, levelled, ploughed and put in readiness for sowing.

Experimental Station, Sidney, B.C.

The conditions governing growth were favourable to established plants; annuals did not do well owing to summer drouth that was general over the island district. Autumn-sown crops and hay gave good yields. Small fruits, orchard fruit, and garden seed crops all gave excellent yields.

The poultry breeding work progressed favourably, culminating in the production of the highest producing family of White Wyandottes in the world. Considerable expansion was provided for poultry breeding. The regular work in experimental breeding, feeding and record keeping was carried on with Jersey cattle and Berkshire swine.

The experimental orchard made fair development and produced some excellent fruits of varieties quite new to Canadian horticulture.

The field husbandry work gave good returns from various rotation crops, and excellent yields were obtained in both grain and fodder.

The soil improvement work carried on consisted of removing roots and stones and tile draining.

The publicity work consisted of an exhibit shown at the larger fairs in the province.

The cereal and forage crop work carried on during the year consisted of extensive variety tests, selections and hybridization.

The work in horticulture was successful to the extent of producing 2,500 pounds of excellent garden vegetable seeds, and the obtaining of considerable valuable data on this line of work, which is new to the district.

The apiary gave an average surplus of 100 pounds per colony.

Some building repair work was done. One house to be used as a residence was erected, also a small pumphouse, two poultry-houses, a shed and a 20-foot extension to the dairy barn.

Substations.

Experimental work was continued at Fort Vermilion, Forts Smith, Resolution and Providence, Grouard and Beaverlodge in Alberta; at Swede Creek, near Dawson, in the Yukon, and at Salmon Arm, B.C., and further data were obtained as to the agricultural possibilities of these districts. It is proposed to issue, during the coming year, brief bulletins on the results so far obtained at Fort Vermilion and at Beaverlodge.

HEALTH OF ANIMALS BRANCH.

The work of this branch is limited to the administration of the Animal Contagious Diseases and the Meat and Canned Foods Acts and regulations passed thereunder, and is of a most important and far-reaching character, including, as it does, the protection of our live stock interests, our foreign markets and our export food trade. This work is of a highly technical nature, and as it frequently interferes with business interests, the exercise of tact, diplomacy and good judgment is required on the part of my officers at all times.

More or less difficulty has in recent years been experienced in maintaining an adequate and efficient force, owing to the scarcity of suitable and properly trained veterinarians. This is a serious situation, in view of the fact that the work is rapidly increasing, and there are many opportunities for investigational and research work, which, although of the utmost importance from an economic standpoint, cannot be undertaken until the trained help is available.

As the application of veterinary science is indispensable to our live stock interests, it is of the utmost importance that there is an available supply of modernly trained veterinarians. Our live stock is undoubtedly our most valuable asset so long as our herds and flocks are free from those serious diseases which sweep the older countries in epizootic form. An epizootic of any of these foreign diseases in this country would be a very serious matter indeed, as it would quickly transform this valuable asset into an alarming menace. It is consequently essential to maintain an adequate force of trained veterinary inspectors not only for the purpose of enforcing the regulations of this branch, but also for the purpose of prompt, efficient action in combating foreign diseases should they unfortunately be introduced into this country. Realizing the importance of preparedness, and in view of the shortage of veterinarians, the problem of encouraging suitable young men to enter the veterinary profession

was discussed among other matters at a conference of provincial Deputy Ministers of Agriculture and other representatives held in this city on March 17, 18 and 19. It was suggested that the Provincial Governments could assist by offering scholarships for competition at the agricultural colleges, these scholarships to entitle the winners to attend a recognized veterinary college. This suggestion met with the approval of the conference, and I, therefore, hope that if it is carried out by the provinces, it will be the means of inducing not only the winners of these scholarships, but also other agricultural students to take up the study of veterinary medicine.

The standard for veterinary education has in recent years been materially elevated. It is now necessary for the student to pass his junior matriculation before he can enter the only English veterinary college in this country. He must then attend college for four years before he can graduate. These requirements, while in my opinion quite necessary, have nevertheless a deterring influence, owing to the fact that the veterinary profession does not offer the same financial returns as its sister professions. As the services of highly trained veterinarians are invaluable in an agricultural country, the young man who enters the veterinary college to-day, under its improved status, may expect better opportunities in the future with larger financial returns for efficient service.

It has been necessary to exercise the greatest vigilance during the past year with regard to overseas importations. Many of the countries of Europe have been experiencing very serious epizootics, and while, owing to the prevalence of these dangerous diseases in Europe, live stock importations have not been permitted for many years, there is always a possibility of infection being introduced through the channels of commerce.

Shipments of hides have been continually arriving on this continent from foreign sources, and it has been necessary to regulate these shipments as far as practicable. The importation of these hides is prohibited, unless they are accompanied by certificates from reliable sources stating that the hides have been procured from animals free from contagious diseases. Shipments not accompanied by these certificates are held at the landing port until arrangements are completed for their disinfection at points where suitable facilities exist. The importation of these hides is undoubtedly a source of danger, but as it has assumed large commercial proportions, it is necessary to exercise caution in its control. In view of the great difficulty in carrying out effective disinfection of hides, owing to injury and to the interference with tanning operations, the Veterinary Director General is conferring with the tanners with a view to recommending suitable and practical measures for our protection in this connection.

I regret to report that foot and mouth disease has again been causing very serious losses in England. Outbreaks have occurred at frequent intervals, extending from the Isle of Wight to the northern counties. It has, therefore, been necessary to prohibit all cattle, sheep, other ruminants and swine being imported from that country for some time. In view, however, of the great importance of permitting our breeders to import animals of special breeding, and owing to the fact that Scotland has not at any time had the disease within its boundaries, importations are being allowed from Scotland, provided the animals have been in that country for a period of two months previous to their embarkation.

The prevalence of rabies in England has also necessitated the taking of suitable measures to protect this country from the infection of this very serious disease. The importation of dogs has, therefore, been prohibited, unless such importations are accompanied by certificates signed by officials of the British Board of Agriculture, stating that the dogs have come from a rabies free area and that they have not been exposed to the infection of rabies for a period of six months prior to importation.

In the minister's last report reference was made to conditions following the recent war which would very materially increase the danger of introducing into this country serious foreign diseases and it was stated that the importation of horses known to have been in continental Europe was prohibited. Although these restrictions were in force one hundred and ten (110) remounts, the property of officers of the Militia Department, arrived at the Atlantic seaboard on the steamships *Dominion* and *Tacoma* in the months of June and July, before I assumed charge of this department. I understand that these shipments arrived without authority but were permitted to land under certain conditions. The horses were removed under official supervision to the old British Remount Depot at Dixie. These premises were placed under quarantine and the horses were isolated thereon until March 15, 1920, when they were released and turned over to the Militia authorities. The expenses in connection with the care and feeding of these animals were borne by that department.

All possible measures were taken by my officers to prevent any possibility of disseminating infection in case any disease was found to exist. Visitors were not permitted to come on to the quarantine grounds, and in order to enforce this ruling watchmen were kept on guard at all times. The danger which exists in importations of this kind was amply exemplified in the fact that it was necessary to destroy several of these horses for Ulcerative Lymphangitis, a foreign disease which became widely scattered throughout Europe during war operations. This disease had not previously been detected in this country, and if precautionary measures had not been taken and the horses had been distributed throughout Canada, my department would undoubtedly have been confronted with a very serious situation.

Although my department has on more than one occasion been criticised for enforcing too rigid regulations in connection with the importation of stock from foreign countries, I am of the opinion that too much care cannot be exercised with regard to these importations. There are many very serious diseases prevalent in foreign countries, to the infection of which our stock has never been exposed. Canadian animals do not, therefore, possess active or passive immunity against these diseases, and if the infection were introduced there would be every probability that the epizootic would extend from coast to coast and decimate our animal population. In view of this fact it is essential to prohibit importations from countries where serious diseases are known to be prevalent, although I appreciate the necessity of importing valuable strains of various breeds to improve our herds and flocks. As a further precaution it is necessary for the importer to obtain a permit from my department for the importation of animals from any part of the world except the United States and Newfoundland. Applications for permits are carefully considered and are only granted for shipments coming from countries free from serious contagious diseases.

A quarantine system is maintained on our Atlantic and Pacific seaboards for the purpose of detaining animals under observation for a suitable period, to ensure their freedom from disease before they are permitted to come in contact with Canadian animals. The most important quarantine stations on the Atlantic seaboard are situated at Quebec, St. John, N.B., and Halifax, and on the Pacific seaboard at Vancouver and Victoria. An experienced veterinarian is in charge of each station and it is his duty to keep a careful supervision over the animals at all times while in quarantine. Suitable accommodation is provided free of charge for these animals, but the department does not assume any responsibility for their feeding and care while being detained. The importer must make his own arrangements in this connection.

Outbreaks of contagious disease in this country are given prompt attention by a well-organized staff. The statistics for the year 1919–20, which are out-

lined in the special report of the Veterinary Director General, show a very favourable condition of affairs with regard to contagious diseases.

GLANDERS.

This disease has in the past given my department a great deal of anxiety and trouble, and it has been necessary to enforce an aggressive policy involving compulsory slaughter of all animals reacting to mallein, for which compensation has been paid. A rigid enforcement of this policy has practically eradicated this very serious disease of horses, mules and asses. During the past fiscal year glanders has only been detected in the provinces of Manitoba and Saskatchewan. The outbreaks in these provinces were quite limited and were quickly controlled, involving the slaughter of approximately sixty horses.

Special care is taken to prevent the introduction of infection from foreign sources, and suitable regulations are strictly enforced in connection with these importations.

DOURINE.

Only two horses were destroyed for this disease during the past year. These animals did not manifest any symptoms of the malady, but the laboratory tests, while not positive, were not satisfactory, and in view of the insidious nature of this disease the animals were slaughtered.

Our investigations and laboratory blood tests of samples taken from thousands of horses indicate most conclusively that this disease has at last been eradicated. The eradication of this disease has only been accomplished through the enforcement of some radical measures, which were at the outset very strongly opposed by the horse breeders.

When this disease was first discovered in southern Alberta there was no satisfactory method for diagnosing the latent cases. It was, therefore, necessary to prohibit entirely breeding operations over a large area and to keep many large ranches under quarantine for very long periods. As this procedure caused a great deal of opposition, which seriously interfered with the control of this malady, it was necessary to establish a quarantine station in the infected area for the purpose of conducting research work, with a view to obtaining a more satisfactory method of diagnosing these cases. Fortunately Dr. E. A. Watson was able, after close application to research work at this station for a considerable period, to perfect a laboratory method for making a quick and satisfactory diagnosis. As soon as this method was adopted the department made very rapid progress in controlling this disease, which was rapidly ruining the horse breeding industry in the west. It was necessary to slaughter a very large number of horses showing no outward symptoms of the disease. The post-mortem results, however, confirmed this method of diagnosis, and as a result it has been possible, after many years of diligent work, to eradicate this disease.

HOG CHOLERA.

This highly infectious disease has been dealt with during the past year in each province, except New Brunswick, Prince Edward Island, and Quebec, also the Yukon Territory. In the province of British Columbia, however, only 84 hogs were destroyed for this malady, while the largest number was slaughtered in the province of Ontario.

Fortunately this disease has not been as prevalent as in the past. The policy of supervising the feeding of garbage to hogs and the enforcement of regulations requiring the thorough cooking of this material before being fed, has, I think, had a beneficial effect in preventing outbreaks. The policy of immunization with serum and virus, which is largely followed in the United

States, has not been necessary in this country. Although a few herds have been so treated, these have been exceptional cases, and experience has shown that my department would not be justified in extending this practice.

MANGE IN HORSES AND CATTLE.

Only a few limited outbreaks of horse mange have been detected in Canada during the past year, and these outbreaks have been eradicated without any undue trouble.

Cattle mange has been limited to the provinces of Alberta and Saskatchewan, but it has given this department a great deal of anxiety for many years. Our statistics, however, show that progress has been made in cleaning up localities, but the infected area in these two provinces is so large that the general situation is materially unchanged.

The policy of this Department in placing a blanket quarantine over this large area many years ago was a wise procedure, and there is no doubt that it has prevented the dissemination of this disease throughout this country, and has also been the means of retaining for our live stock men the United States market. Even though all possible precautions are taken to prevent infected cattle leaving this area, shipments of affected animlas have been detected from time to time in the United States market. Some of these shipments had been inspected at Winnipeg by officers of the Bureau of Animal Industry in addition to the inspection made by my officers. The inspection in question would undoubtedly be very carefully made, and although the inspectors were unable to detect any suspicious symptoms of mange the disease was detected in some of these animals upon their arrival at the United States destination points. As a result, the United States authorities, during the past summer, refused to accept Canadian cattle. The situation was quite serious and the Veterinary Director General visited Washington and discussed the whole matter with the Chief of the Bureau of Animal Industry. The United States authorities, however, would only consent to permit the importation of Canadian cattle going south from Winnipeg under the following conditions:—

Separate yards to be maintained in the St. Boniface stock yards for all cattle coming from the mange area, also separate yards for all cattle coming from outside points, accompanied by the required district health certificates, and separate yards for cattle from outside points arriving without these certificates.

They further refused to accept shipments of cattle from the mange area pens, pointing out that under the Act of Congress the importation of cattle into the United States, which had been exposed to infection of a contagious disease within sixty days prior to shipment, was absolutely prohibited. While the United States authorities would not accept cattle from the mange area going south from Winnipeg, under this system they accepted cattle coming from outside that area which were accompanied by the necessary certificates. The situation was serious, but it was necessary to arrange matters in Winnipeg in accordance with their ruling, as otherwise practically all our western export cattle trade would have been stopped. A peculiar situation resulted, owing to the fact that while shipments from the mange area arriving from Winnipeg were refused admission into the States, the American officers were permitting similar shipments at other western points, such as North Portal and Coutts. In view of this fact my officers did not refuse to issue certificates for shipments of export stock from the mange area whenever this was possible. Unfortunately this action on the part of my officers caused a great deal of dissatisfaction among the stockmen, owing to the fact that in cases where the routing of these shipments

was changed via Winnipeg instead of via North Portal or Coutts, the cattle upon arriving at the St. Boniface stock yards were not permitted to proceed south to the United States. This dissatisfaction became much more apparent and I considered it advisable to call a conference of all representative stockmen in Calgary during the month of December. It was my intention to be present at this conference, also the deputy minister and the Veterinary Director General. Unfortunately Dr. Torrance was not able to attend, and at the last moment I found a large deputation arriving in Ottawa to discuss important matters with me, which prevented me going also. The deputy minister and Dr. Hilton attended the conference, at which representative stockmen from all parts of the mange area were present. I also considered it wise to arrange for all the veterinary inspectors engaged in mange work to attend this conference.

All phases of the mange situation were discussed. The department's efforts to eradicate this disease for the past twenty-five years were reviewed and the stockmen were shown that they had failed to assist and co-operate with the department in the dipping of their animals. It was shown that at times when compulsory dipping was in force a very large number of cattle were not brought to the vats for a second dipping and that this neglect on the part of the stockmen was very largely the reason why mange was still found throughout this area. Some of the stockmen frankly admitted that they had neglected their duty in this respect, but stated that they were now willing to co-operate fully with the department and to see that all the other stockmen did so also, provided, however, that the department would remove the blanket quarantine as soon as dipping was completed.

The difficulties in connection with dipping such a large number of animals in such a large area, under such varying conditions, were very fully explained and the stockmen were advised that if they would assist the department to enforce satisfactory dipping under a compulsory order during a given period, the blanket quarantine would be removed and the department would then deal with individual outbreaks as a separate and independent quarantine. This decision was well received and the stockmen gave their assurance of full and hearty co-operation. It was, therefore, unanimously agreed that the department should enforce a compulsory mange dipping order at a suitable date, and I have just recently decided to have this compulsory dipping enforced from June 24 to July 5, 1920, this period appearing to be the most satisfactory to all concerned.

My officers in the mange area have been working persistently and conscientiously during the winter months in an endeavour to ascertain what particular districts are actually free from mange, as it is important to restrict the compulsory mange dipping order to as small an area as possible.

I was very glad to be able to sign an order, which became effective on March 30, 1920, considerably reducing the mange area.

It is very fortunate that this conference was arranged, as it was the means of urging a better understanding between the stockmen and my department. Energetic measures have been taken, and are still in progress, to organize the various districts for the compulsory dipping. The area has been divided into numerous small districts, in each of which a committee of stockmen have been chosen and special work assigned to them with regard to dipping operations. These committees are working in close co-operation with my officers, and individuals on each committee have been assigned to special work before dipping commences and during the progress of dipping. I have, therefore, every reason to believe that a most thorough roundup of all cattle in the area will be made, and that the dipping will be carried out under the most favourable circumstances.

I fully appreciate the responsibility resting upon my department in the removal of the blanket quarantine, as this will throw open a very large territory and permit the indiscriminate shipping of all cattle in that area. As it is essential to prevent diseased animals arriving at our American markets, it will be necessary to exercise a close supervision over the old infected area for some time, with a view to placing special quarantines wherever any suspicious symptoms of the disease may be found.

SHEEP SCAB.

This troublesome disease of sheep is fortunately very rare in this country. Outbreaks during the past year have been dealt with in the province of Manitoba, but these outbreaks have occurred in districts in which the disease was discovered a year ago. The outbreaks, however, were limited in number and were promptly controlled, and I trust that the disease will be eradicated with the spring dippings.

A few outbreaks of this disease were also discovered in the province of Saskatchewan, and in each instance the infection was introduced by sheep shipped from districts in Manitoba in which the disease was later found.

In order to protect our flocks from the introduction of infection from outside sources, all sheep imported from the United States, with the exception of those for immediate slaughter, are held at the boundary port for a period of thirty days, unless they are accompanied by a satisfactory dipping certificate signed by an officer of the Bureau of Animal Industry.

TUBERCULOSIS.

In view of the wide distribution of this disease and its chronic tendencies in cattle, no compulsory measures are being enforced in an endeavour to control and eradicate it. The importance of taking suitable measures cannot be too strongly emphasized, especially so as the disease is gradually increasing in this country. The Meat Inspection statistics show that it has increased from 2 to 3 per cent in cattle and from 4 to 8 per cent in hogs. There are, however, so many difficulties in the enforcement of effective measures to control this disease, that before active steps can be taken it is essential to obtain the hearty co-operation of all live stock men. While there is no doubt that many of the intelligent live stock owners realize that something must be done to control this disease and are quite willing to assist in many measures which may be enforced, there is nevertheless a much greater number who are not at all in sympathy with the taking of active measures.

The Municipal Tuberculosis Order, which was passed a number of years ago, and which provides for material assistance to any municipality from this department, has not been taken advantage of to any great extent. It was found necessary three years ago to amend this order, owing to the fact that many dairymen objected to having their cattle tested with tuberculin. Municipalities can now obtain the assistance of the department under this order, provided that the milk from cattle, whose owners object to the tuberculin test, is properly pasteurized.

The United States pure-bred breeders a few years ago realized the necessity of controlling this disease and they appreciated the fact that unless some suitable measures were taken the live stock breeding industry would not make satisfactory progress. They, therefore, arranged for a conference with the Bureau of Animal Industry and the State officials and the question was very thoroughly discussed. It was finally decided to accredit the herds which were found to be free from tuberculosis after they had been tested by federal officials for a definite period. Committees were formed to study out this plan and finally it was

decided to call it the Accredited Herd Plan. The federal authorities passed suitable regulations and this plan has now been in force for several years and has proved to be a practical plan, a workable plan, and a popular plan among the live stock breeders who are familiar with it.

There are at the present time in the United States over one thousand accredited herds of pure-bred animals, and there are a greater number of herds undergoing accreditation. As soon as the State authorities realized the value of this work they immediately passed more stringent interstate regulations to protect their own herds. The Canadian pure-bred breeders are now finding that it is a great deal more difficult for them to ship their animals to United States points than it was a few years ago. It was soon apparent to me that this department must inaugurate a similar plan and the necessary measures were, therefore, taken for the passing of suitable regulations for the Accredited Herd Plan in this country. These regulations became effective in September last and applications are being received regularly by the Veterinary Director General from owners desiring to have their herds placed under the supervision of the Department for accreditation.

There is a mutual agreement between the United States Government and my department, under this plan, that cattle from accredited herds can enter into either country without detention or test. This will be of inestimable value to our pure-bred breeders as soon as they are the owners of accredited herds.

Under the Municipal Tuberculosis Order and the Accredited Herd Plan compensation is paid for animals slaughtered under the supervision of a veterinary inspector and the owners also obtain in addition thereto whatever salvage they can procure from the carcass.

The department also takes charge of eliminating tuberculosis in the herds and maintaining such herds free from this disease. A compensation policy is not followed under this system, but the department supplies the services of its officers free of charge and all possible measures are taken to eradicate the disease in the herds placed under its supervision. The owners must remove all reacting animals promptly from the herd. These reactors are permanently earmarked by a veterinary inspector after which the owner can dispose of them as he sees fit, subject to the approval of the department.

The department also supplies a large number of doses of tuberculin free of charge to qualified veterinarians, upon the written request of owners, provided the veterinarians forward reports of each test on charts supplied to him for this purpose, and further that the owners hold all reactors on their premises until they have been permanently earmarked by one of my officers. This tuberculin is manufactured at the Biological Laboratory in Ottawa.

ANTHRAX.

This very serious disease exists only to a very small extent in Canada. Isolated outbreaks occur in the province of Ontario and Quebec in the same districts from year to year. The number of cases, however, during the past year were very much smaller than they have been for many years.

RABIES.

This disease has not been found to exist in this country at any time during the past year. In view, however, of the outbreaks of this disease in England during the past year, it has been necessary to prohibit the importation of dogs from that country unless accompanied by a certificate signed by an officer of the British Board of Agriculture and Fisheries, stating that the dog has come from a rabies free area and has not been exposed to the infection of rabies for a period of six months prior to date of shipment.

FOXES.

The regulations with regard to the importation of foxes to Prince Edward Island are still being enforced and have, I believe, been the means of preventing the introduction of serious diseases among foxes, which would have interfered very seriously with the valuable fox industry. A large number of fatalities, however, did occur, principally among the young vixen, and it was necessary to send one of my pathologists to the island to conduct investigational work. It was found that the principal cause of the trouble was malnutrition.

In view of the great importance and value of this industry a suitable small laboratory is being equipped at Charlottetown where suitable research work can be conducted by the pathologist stationed there. I have also arranged to have suitable nutrition experiments carried on at our Research Station in Hull, and have secured the services of a nutrition expert to work in connection with the pathologist at that station in an endeavour to ascertain facts with regard to the feeding of foxes, which I trust will be of inestimable value to the fox industry.

LABORATORIES.

The Department maintains laboratories at Ottawa, Lethbridge, Alberta, and Agassiz, B.C. The Biological Laboratory at Ottawa is maintained chiefly for the purpose of microscopically examining the numerous specimens received for diagnostic purposes, as well as for the manufacture of biological products used for diagnostic and immunizing purposes.

The tuberculin and mallein used by our officers is manufactured at this laboratory, also a very large amount of blackleg vaccine, which is sold to stock owners at cost.

One of the pathologists at this laboratory is also devoting some time to research work in connection with contagious abortion, and live culture is now available for any live stock owner who may desire to employ a veterinarian to immunize his animals. I am given to understand that this vaccine is giving very encouraging results.

In view of the limited facilities at this laboratory, especially for research work, a suitable site was purchased two years ago on the Mountain Road in Hull. A laboratory has been equipped on this site and other suitable buildings have been erected. It is my intention to have the more important lines of research work carried on at this station. In view of the importance of conducting research work with serious contagious diseases my Department has gone to considerable expense to erect a fence around this station, which will prevent any possibility of infection being carried out of it by small animals.

The value to our live stock interests of properly conducted research experiments cannot be over-estimated. It is difficult, however, to find suitable and capable individuals to carry on this work ,and it will be necessary, therefore, to select suitable young men who enter the service and to encourage them in this work, in order that it can be carried out to the best possible advantage.

The work in the laboratories at Lethbridge and Agassiz consists principally of the investigation of diseases peculiar to the provinces in which these laboratories are maintained. A great deal of the time of the pathologist at Lethbridge has been devoted to the examination of blood taken from suspected cases of dourine, while the pathologist at Agassiz is largely engaged in investigating the life-history of certain parasites, with a view to determining to what extent they may carry infection of contagious diseases.

Work has also been conducted at the latter laboratory in connection with plant poisoning.

INSPECTION OF STOCK CARS AND YARDS.

An organized force of inspectors is maintained for the sole purpose of cleansing and disinfecting railway stock yards, corrals, chutes and stock cars, and in order that stock cars can be systematically disinfected from time to time an order has been in force for many years requiring all empty stock cars passing through certain definite points throughout this country to be held and disinfected at these points. This order has given very satisfactory results.

In addition to stationing car inspectors at the points mentioned in this order, as well as at other points where cars can be properly disinfected, a number of travelling inspectors are employed, who cover definite territories and supervise the work of the local men. The travelling inspectors also consult with the railway companies, with a view to making arrangements for this work and getting the co-operation of these companies. I am glad to be able to state that my department has experienced very little difficulty in enforcing its regulations with the transportation companies.

QUARANTINE STATIONS AND INSPECTION PORTS.

Quarantine stations and inspection ports are maintained on the Atlantic and Pacific coasts and along the international boundary. Suitable regulations are enforced with regard to the importation of all animals from foreign countries. Unfortunately it has been necessary to prohibit the importation of cattle, sheep, other ruminants and swine from any part of England, owing to outbreaks of foot and mouth disease in that country, and, therefore, the quarantine stations on the Atlantic seaboard have not been used to any great extent during the past year.

Meat and Canned Foods Division.

The work of this division has been carried on very well considering the handicap experienced through the lack of a sufficient number of qualified inspectors.

The figures for the year show in the slaughter of cattle an increase of 126,000, in sheep of over 202,000, while there has been a decrease of 150,000 in the number of swine killed. The variety of diseases found on post-mortem has varied but little. The principal of these is tuberculosis. I regret to say that this disease continues to show a gradual increase but I trust that in the very near future it will be possible to develop a policy which will tend to its control and final eradication.

During the year a number of prosecutions were instituted concerning the sale of oleomargarine. It is unfortunate that so many dealers permit their greed for money-making to destroy their sense of honour and fair dealing to the extent that they transgress the law by misrepresenting their product and selling a food under a misleading name. This is particularly to be regretted in connection with the importation, manufacture and sale of oleomargarine, a produce permitted to be made and sold in Canada owing to the extremely high price of butter which has placed that food beyond the reach of the family of the ordinary individual. In connection with the different actions taken, convictions were secured and in the majority of instances substantial fines were collected. A rigorous policy of prosecution will be pursued against all those who continue to disregard the requirements of the law.

During the year inspection was granted to one or two oleomargarine plants, but for some reason best known to the proprietors these did not continue operations beyond a very short time. Our requirements regarding sanitation and

equipment were such that they felt they could not comply with them consequently our inspectors were withdrawn and the plants closed.

In the month of November the packing-house in Chatham, Ont., was again placed under inspection.

A closer supervision of all our export meats has been inaugurated, in connection with which it is necessary to send our officers to outside points to reinspect and certify products that have been placed on outside storage waiting for transportation. This system of storage is not altogether satisfactory in connection with the handling of meats, yet owing to the fact that the slaughter of cattle is particularly heavy during the fall and the refrigeration accommodation at the packing-houses is not sufficient to hold the meats slaughtered and transportation facilities are inadequate, it is absolutely necessary that these foods be placed in properly refrigerated premises until such time as market and transportation conditions are satisfactory so that they may be exported. The completion of the new cold storage at Montreal, which will be modern and up to date, will to a great extent obviate the necessity for these meats being forwarded to storages in the United States. This will have the extra advantage of keeping such meats under the direct supervision of the officers of this division and their being at all times absolutely under Canadian control.

Early in the year a meeting of those engaged in the canning of fruits and vegetables was called in Toronto when the new standards for these products were discussed and agreed upon. In the past it was unfortunately too true that the label on this class of food was no indication of the contents of the tin. The idea of the new standards was in keeping with the requirements of the Act which distinctly states that the label placed upon such products must show a true and correct description. In order that there might be no misunderstanding regarding these matters it is now required that all such labels be forwarded for approval. This has entailed an immense amount of work for my officers, yet wonderful progress has been made. It has been impossible in all cases to adhere strictly to the regulations regarding labels as many millions of the labels were in the hands of the packers and some little time was given in order that a number might be used up in order to minimize their loss. However, it is expected that from this time on all labels used on products of this kind will convey to the purchaser and consumer a reasonable guarantee as to the contents of the tin.

The amendment to the Act of the year previous, governing imports, is beginning to have its effect. It was necessary, in order that imports might be controlled, to examine hundreds of samples of foods brought into Canada, with the result that a great many carloads were held on account of being improperly graded, and in different instances these held consignments were returned to the point of origin. Several shipments were also returned because of the fact that at the time of their entry into Canada they were unfit for food. This work of inspection is developing very rapidly, and with a little patience on the part of the public we hope to have it in such shape as will preclude the possibility of any unsound or improperly labelled food being offered for sale.

FRUIT BRANCH.

THE FRUIT SEASON.

The effect of several years of neglect of orchards in Ontario and the result of the unusually severe weather during the winter of 1917-18 continued to be in evidence throughout the season of 1919. Many orchards in the province of Quebec and a few in Ontario, which produced a crop of apples in 1918, had a heavy bloom in 1919, but shortly after the fruit had formed the leaves yellowed and both fruit and leaves dropped, and the trees died.

Weather conditions at the beginning of the season were considered favourable and, generally speaking, there was an abundance of bloom in all fruit-growing sections. In Nova Scotia and New Brunswick the weather was favourable during the blossoming period which resulted in a heavy set of fruit. In Quebec and throughout the apple-growing districts of Ontario the weather was cold, which retarded the bloom. Early varieties in Quebec were practically a failure, but with later varieties in both provinces, the set was fair and considerably greater than the previous year.

In the tender fruit districts of Ontario a mild winter was followed by a backward spring with an unusually heavy rainfall, which made it impossible for growers to get on the ground to apply the first spray which is necessary to control peach leaf curl; as a result many orchards were badly affected and produced little or no crop during the season. It is doubtful if there ever was a season in the Niagara peninsula when the blossom on nearly all fruits was greater, but unfavourable weather during the blossoming period resulted in a very poor set. Sweet cherries did not yield over ten per cent of a full crop; sour cherries were better and yielded approximately sixty per cent; plums were very light, estimated at not over fifteen per cent; peaches varied, in some districts a complete failure, in others a fairly good crop, on the whole about fifty per cent of an average crop; pears were approximately fifty per cent and grapes a full crop. The period of hot, dry weather greatly reduced the crop of raspberries.

In British Columbia weather conditions were favourable until the end of May when there were slight frosts which injured the first bloom, but the weather following the frosts continued cool and cloudy for about one week. During the first two weeks of June the weather was exceptionally favourable but turned cool with rain toward the middle of the month, and was very favourable for the balance of of the month. All trees and plants made excellent growth. July was very hot and unfavourable to the growth of raspberries, which reduced the yield.

Nova Scotia gave promise of a crop of apples equal to or greater than that of 1911, which was approximately 1,800,000 barrels. A serious infestation of apple scab greatly reduced the quality of the fruit, especially the Gravenstein. During the early part of October there was a frost which chilled the apples severely, but apparently did no damage as the weather following was cool and cloudy; this was followed by a severe frost on October 20, and some apples in all sections were frozen solid and thousands of barrels were rendered useless. The crop as estimated by our chief inspector was practically 1,600,000 barrels, over 475,000 barrels of which were exported to the United Kingdom. An unusual feature in connection with the marketing of the Nova Scotia crop was the shipment of 587 cars to the United States, the greater proportion being bulk for the cider and vinegar factories.

Generally speaking, the prices obtained for all fruits during the 1919-20 season established a record. The high prices were no doubt due to the short crop and to the world demand for preserved fruits, together with the unprecedented demand for fruit syrups in the United States.

FRUIT CROP REPORTS.

During the growing season the publication of the Fruit Crop Report was continued, but it was issued as "The Fruit and Vegetable Crop Report" in order to accede to numerous requests from growers and dealers who asked us to publish a report including crop estimates, prices, etc., of potatoes and onions as well as of all varieties of fruit. The reports gave in concise form, crop prospects and conditions in all parts of Canada, from June until October, inclusive. They also included summarized reports of crop conditions in countries whose fruit and vegetables come into competition with our Canadian-grown products.

Telegraphic Market Reports were issued simultaneously at Middleton, N.S., Ottawa, Winnipeg and Vancouver, throughout the marketing season, twice weekly during the period of heavy movement, and once each week thereafter. These reports contained the prices of all fruits grown commercially in Canada, and of some vegetables, and any items of special interest to facilitate marketing. Quotations were telegraphed by officers of the Fruit Branch located throughout Canada and, during the season when apples are exported, cablegrams were received direct from the Canadian Fruit Trade Commissioner in Great Britain.

THE BRITISH MARKET.

When it was evident that the crop of apples in Nova Scotia would be a large one and other fruit-growing provinces gave promise of fair to good crops, it was realized that there would be a sufficient quantity of second and third grade apples to export at prices to the consumers in Great Britain considerably lower than the control price fixed by the British Ministry of Food (67 s. 8 d. per barrel and 20 s. 10 d. per box). It was also realized that the demand for the better grades and varieties would be such that the price in an open market would be greater for them than the control price. Having in mind that the British Ministry of Food were interested only in apples as food and not in the better grade and varieties as such, an effort was made by the Fruit Branch to have the control removed, which would permit Canadian apples being sold on a free market. Our request received due consideration but was not granted, the reason being that the experience of the British Food Administration where the control price was removed had been very unsatisfactory, and it was deemed by them advisable to continue exercising control. As the home and United States markets were very attractive for the better varieties and higher grades, only a small portion of the first grade was exported. Our first opinion was supported by the prices received as the season advanced. While the market opened up strong, with increasing quantities, great weakness in the lower grades and poor varieties was noticeable, but it remained very firm for the better varieties and grades, which in many cases, even with No. 2 apples packed in boxes, brought the maximum control price. There is still some doubt as to whether the control will be removed for the coming season, but exporters generally are very desirous that it should be as they are prepared to compete on an open market with the product from other countries.

AUSTRALIAN EMBARGO.

Owing to the export market being cut off on account of the impossibiltiy of securing steamer space, an embargo was placed on the importation of apples into Australia in order to protect the home grower. This prevented British Columbia from exporting the usual quantity, which in 1916 amounted to 70,000 boxes, in 1917 to 76,000 boxes and in 1918, owing to the embargo, to only 18,000 boxes,

which were shipped to New Zealand. Efforts were put forth through the Department of Trade and Commerce to have this embargo removed or modified, but without success as the Australian crop must necessarily be consumed at home.

OTHER MARKETS.

Owing to the reduced acreage of apples in Ontario and Quebec from the causes already noted and from a similar reduction from the same causes in the States to the south, it is not expected, even under favourable conditions, that the crop of apples in Canada or the United States for several years to come will be such as to cause the growers any great concern as to the returns they might receive for their fruit. In preparation, however, for the time when it will be necessary to widen our distribution and increase our export markets, an inquiry was made through the Department of Trade and Commerce as to the possibilities of marketing Canadian apples in the various countries and with special reference to the regulations governing same. All information in this respect has been published in the *Weekly Bulletin* of the Department of Trade and Commerce.

SUGAR SHORTAGE.

With the approach of the small fruit season in 1919 it was evident, from information received through various channels, that there would be insufficient sugar to meet the requirements of the preserving season. As the sugar refiners were then operating under license of the Canada Food Board, this body was immediately appealed to for assistance in obtaining greater quantities to meet the needs of the preserving season. The records of the Board showed that a greater quantity of sugar had been sold than during the year previous, and it was their opinion that wholesale dealers were holding large stocks for increased prices. At the request of the Food Board, therefore, the Fruit Branch made an investigation of the quantities held by the wholesale dealers in the West, where the shortage was most acute, and found that the dealers in no case were holding any quantity, simply enough to meet their immediate needs. As the Canada Food Board was winding up its affairs, the matter was referred to the Canadian Trade Commission and every assistance was rendered that body in their efforts to meet the requirements by means of a more equitable distribution of available quantities. A measure of relief was obtained in this way, but owing to the uncertainty of the supply, wholesale dealers on the prairies would not contract for fruit beyond the visible sugar supply, which resulted in indiscriminate consignments which in many cases brought very unsatisfactory returns to the grower.

In order to prevent, if possible, a repetition of the conditions which obtained last year, efforts were put forth in February to arrange for adequate supplies to meet the needs of the 1920 crop. The only feasible way in which this could be accomplished was by withholding the issuing of export licenses until such time as the home requirements were satisfied, and it was arranged that if, during the period when production might be in excess of the immediate home requirements, there should be a surplus, that fact would be made known to the public, who would be given an opportunity to purchase this surplus to provide for the period when consumption would be greater than production. Housekeepers apparently have realized the necessity of laying in a supply, when available, to meet their preserving requirements, but at the present time there is still some doubt that there will be sufficient sugar to meet all the requirements of the canning season.

APPLE CENSUS.

As all figures so far published with respect to the production of apples in Canada have been estimates, and as it is very desirable that the actual production should be known so as to enable the producers to form an estimate of the value of their products from year to year, arrangements were made with the Dominion Bureau of Statistics whereby the Fruit Branch would take a census of the apple production in Ontario and Quebec, which would be forwarded to the Dominion Bureau of Statistics for compilation. For a number of years it has been possible to obtain the actual shipments from the provinces of Nova Scotia, New Brunswick and British Columbia, but until the actual production was obtained in the province of Quebec and Ontario, it was not possible in issuing fruit crop reports to give the estimate of the crop for any particular year in a specific quantity. Now that the actual production of apples in Ontario and Quebec has been obtained, it will be possible to state that the crop of any given year is a percentage of the 1919 crop, in terms of barrels or boxes.

STANDARDIZATION OF PACKAGES.

In the practical application of the amendments to the Inspection and Sale Act, assented to May 24, 1918, with respect to standard packages it was found that because of its highly technical character, manufacturers could not meet the requirements without considerable difficulty, and the packages made in accordance with the legislation were not altogether satisfactory to growers and shippers. During the past winter several meetings were held at which repretentatives of growers, shippers and package manufacturers were present, and she whole question was gone into thoroughly. Sample packages were manufactured and tested, which met with general approval and, in order to obtain the main objective in standardizing packages, namely, that of uniformity, the Fruit Branch has had pattern blocks or forms manufactured in accordance with the approved specifications, from which practically all blocks and forms used in the manufacture of Climax baskets will be made. These changes necessitated another amendment to the Inspection and Sale Act.

TESTS OF KEEPING QUALITIES OF GRAPES.

Owing to the uncertainty of the control of the sale of wines made from Ontario-grown grapes, it was deemed advisable to test the keeping qualities of several varieties with a view to extending the season and widening the markets. In co-operation with the Dairy and Cold Storage Branch tests were carried on during the past winter at the Grimsby Pre-cooling Station with very satisfactory results. The prices received for the sale of the fruit used in making the test, justified the additional expenditure, although it was evident the market would be limited for these in Canada.

POTATO AND ONION CONFERENCE.

While section 337A, of the Inspection and Sale Act, passed in May, 1918, provides optional potato grades, the trade felt that this legislation, passed as a war measure, did not go far enough and numerous requests have been received for the establishment of compulsory grading rules for both potatoes and onions. Before any action was taken, however, it was deemed advisable to call together a small conference in order that the department might learn the wishes of those directly interested in these industries. At our request, therefore, official delegates, about

thirty in all,were appointed from the various provinces to represent growers, shippers and dealers, and representatives of the consumers and retailers were also present. The Provincial Departments of Agriculture were also invited to send representatives to take part in the discussion and act in an advisory capacity. The meeting was held in Ottawa under the auspices of the Fruit Branch on February 24 and 25 last. In addition to a very full discussion with respect to the defining of grading rules for potatoes and onions, many other phases of the industry were dealt with; and at the close of the meeting the delegates expressed themselves as feeling that a very great stride had been made in the right direction, not only as a result of the resolutions passed, but also on account of the better understanding which would now exist between the producers and handlers of these products.

The advisability of asking that federal legislation be enacted requiring that all potatoes and onions be graded before being offered for sale was approached with some caution on the part of the growers particularly, as there was a feeling of uncertainty as to the measure of control to be exercised, but after a very free and open discussion and as the delegates secured a clearer idea of the measure of control contemplated, it was evident that compulsory grading was heartily approved and a motion was adopted recommending that federal legislation be enacted along that line. The conference also recommended certain designations of grades for potatoes and onions, together with definitions for same. Other matters that were discussed and in regard to which resolutions were passed, were the marking or branding of the containers, the standardization of containers and the unit of weight in the sale of potatoes, onions and other root vegetables. In so far as the latter point is concerned, the conference was unanimous in recommending that the present law be amended and that the unit of one pound be adopted as the basis of all sales. Legislation to meet the wishes of the conference is now being prepared.

MEETING OF CHIEF FRUIT INSPECTORS.

Advantage was taken of the presence of the chief fruit inspectors when attending the Potato and Onion Conference to discuss the work of the branch as a whole, and as affecting each particular district, with a view to obtaining the greatest uniformity in methods of administration, and to discuss ways and means whereby our staff might render a greater service to the fruit industry. It was the general opinion of those present that meetings of this nature should be held at least once a year.

TRANSPORTATION.

The successful transportation of fruit is a complex problem and during the past season was a very important matter. It is becoming more and more evident that as the industry develops wider distribution and further improvements in the transportation service will be necessary. An earnest effort has been made by transportation specialists to render service where the demands were most urgent. The provinces east of the Great Lakes have, during the past season, demanded special attention on account of the many problems arising there.

Numerous complaints have been investigated and, in many instances, adjusted to the satisfaction of the shippers through conferences with railway, express and steamship officials, such conferences being held at points both in eastern and western territory. It has, however, been necessary in the interests of the fruit industry to submit to the Board of Railway Commissioners the following matters in dispute and to appear before the Board in support of same:—

(*a*) Freight rates on fresh fruit from Ontario to points west of Port Arthur;
(*b*) Average demurrage plan;
(*c*) Heated refrigerator car charges and service;
(*d*) Freight and express facilities at Grimsby Beach;
(*e*) Cancellation privilege of prepayment of freight charges;
(*f*) Adjustment of freight and express rates and routings from Keremeos, B.C.

It is the policy of the Fruit Branch in its transportation work to promote a better understanding between producers, shippers, consignees and the carriers; to receive complaints of the shippers; investigate and negotiate with the carriers; in brief to perfect as nearly as possible the system of efficient, economical distribution of the fruit and vegetable crops. In this way it has been possible to bring about important changes in the freight and express classifications as well as to obtain favourable consideration from the steamship companies for export shipments.

Assistance has been given shippers in every way possible in securing equipment, and bulletins have been issued from time to time acquainting shippers with tariff privileges and changes. Periodical visits are also made to the producing centres during the shipping season.

The extension of markets has been encouraged by obtaining more favourable rates to undeveloped territories in Canada and in the United States. The transportation specialist also attended meetings of fruit growers in various parts of the Dominion.

An officer was again stationed in Nova Scotia to assist in transportation work, and his services were of great benefit to the shippers in marketing the apple crop during the shipping season. In this connection it was necessary to negotiate traffic arrangements for service to United States points and it required the greatest possible attention in order to keep up a reasonable supply of suitable railway equipment during a period of extreme car shortage.

At the urgent request of the Prince Edward Island growers and shippers of potatoes that the service which was rendered during the fall of 1917–18 be continued, an officer was again stationed at Charlottetown and placed in charge of the distribution of all protected cars there and, by direct communication with the Car Service Department of the Canadian National Railway at Moncton, was enabled to provide a supply of mainland protected cars to meet all potato shipments on the Island railway at transfer points.

INSPECTION WORK.

The inspection service was continued during the past year along the same general lines that have been in force since 1915, when the system of inspection at point of shipment was inaugurated. Owing to the increased production in British Columbia and Nova Scotia some additional seasonal inspectors were appointed, these being returned men, who have given good satisfaction. Special attention was paid to familiarizing growers and shippers with respect to the amendments to part IX of the Inspection and Sale Act, assented to May 24, 1918, but some provisions of which only came into force June 1, 1919. The amendments covering the marking and proper filling of open packages were rigidly enforced during the past season, and the results obtained have demonstrated that this is one of the best pieces of legislation enacted for some years in connection with the fruit industry. Wholesale dealers have frequently commented on the marked improvement in the packing and filling of these packages. This part of the work will again receive special attention during the 1920 season.

The enforcement of section 337A providing optional grades for potatoes has increased the work of the staff, as many inspections of potatoes have been

made both of ungraded stock and of those actually coming under the provisions of this section.

Wherever violations of the Act have been reported, whether with regard to fruit, fruit packages or potatoes, each case has been throughly investigated by the chief inspector for the district in which the offender lived. While many hundreds of violations have been reported during the past season, it was deemed advisable to prosecute in only twenty-five cases, in all of which convictions were secured.

As in former years, the staff has co-operated with the officers of the provincial departments in giving practical demonstrations in improved orchard methods, and by assisting at fruit-growers' meetings. Courses in barrel and box packing have been conducted by the inspectors, and in many cases members of the staff have served as judges at fruit exhibitions.

Wholesale dealers in the city of Montreal having noted the benefits resulting from the standardization of fruit packages, requested that legislation be enacted standardizing blueberry packages and defining grades. It was pointed out that the Inspection and Sale Act, part IX, excludes wild fruit from its provisions and as there are many difficulties in defining grades for such fruits, it was suggested that the dealers should prescribe the dimensions of the packages they preferred, and that the department would then be glad to recommend their use, also to recommend a grade which might improve the industry. Circular letters were sent out to all those interested in the districts from which supplies are received in Montreal, and an inspector was stationed at the shipping point to instruct the shippers in the better methods of preparing their shipments. The results obtained were most satisfactory, and the dealers have again requested that legislation be enacted. As blueberries are shipped in large quantities from the provinces of Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia inquiries were made as to the packages used in each province. It is quite evident that, with the exception of Nova Scotia and New Brunswick, no two provinces are using the same package, but in each case the package now in use appears to meet all the requirements. The Fruit Branch will again this year assist the shippers in the province of Quebec in obtaining uniformity of package and grade.

Owing to the various stages of the ripening and general condition of berries shipped from the lower Fraser valley in British Columbia to the markets on the prairies, which in many instances arrive in a very much decayed condition, a special service of inspection was inaugurated last season whereby the fruit as hauled to the car for loading was graded by one of our inspectors. Where fruit was over-ripe, or where there was a doubt as to its carrying in proper condition to the prairie markets, the berries were sent to the canning factory or to the local market, and only first class, sound fruit was shipped. In all cases the fruit arrived in excellent condition. This demonstration of grading for long-distance shipments will undoubtedly prove of great value to the shippers as it has been clearly shown that it is poor business to pay freight charges and all other expenses on a product which is worthless when it reaches its destination.

On account of the great scarcity of ocean tonnage during the war years, and the embargo on apples entering the United Kingdom, the inspection on the docks at Montreal was unnecessary. This was resumed last season, but the branch has not departed from its policy of inspection at point of shipment. It is, however, still considered necessary to retain our inspection service on the docks at all export points.

INSPECTION STATISTICS.

The following table gives comparative statements of the number of lots inspected and the number of packages inspected for the seasons 1915–16 to 1919–20, inclusive. It should be noted that these figures do not include packages in

the process of packing, and it is estimated that at least as many more are inspected in this way:—

SEASON 1915-16 TO 1919-20.

Variety.		No. of lots inspected.	No. of packages in lot inspected.	No. of packages inspected.
1915-16.				
Apples	Brl.	8,882	710,858	60,248
"	Boxes	4,297	758,337	46,791
"	Bskts.	204	14,319	1,797
Pears	Boxes	1,062	121,414	8,816
Peaches	"	1,022	270,508	12,575
"	Bskts.	838	106,569	10,796
Plums	"	998	482,416	22,231
Tomatoes	"	633	200,343	7,926
Small fruits	Quarts	1,724	2,670,984	275,234
Grapes	Bskts.	260	382,332	11,395
			Total.....	457,809
1916-17.				
Apples	Brl.	6,412	404,597	43,359
"	Boxes	2,337	679,148	32,420
"	Bskts.	188	14,472	1,332
Pears	Boxes	200	108,426	6,108
Peaches	"	1,179	289,560	15,612
Plums	Bskts.	609	158,133	7,215
Tomatoes	"	624	136,993	5,812
Small fruits	Pkgs.	2,039	282,365	99,799
Grapes	Bskts.	193	273,435	7,951
			Total.....	219,608
1917-18.				
Apples	Brl.	5,652	379,496	40,117
"	Boxes	3,157	908,892	35,888
"	Bskts.	196	16,146	1,709
Pears	Boxes	779	112,717	4,954
Peaches	"	1,303	224,228	14,481
Plums	Bskts.	773	195,084	5,952
Tomatoes	"	652	158,971	6,383
Small fruits	Pkgs.	1,312	248,539	14,637
Grapes	Bskts.	135	153,027	3,415
			Total.....	127,536
1918-19.				
Apples	Brl.	4,861	382,653	36,947
"	Boxes	2,431	760,307	26,769
"	Bskts.	122	19,614	1,212
Pea s	Boxes	576	101,675	4,267
Peaches	"	794	242,735	8,806
Plums	Bskts.	515	182,286	4,576
Tomatoes	"	394	145,113	3,630
Small fruits	Pkgs.	852	173,567	11,616
Grapes	Bskts.	106	198,336	2,126
			Total.....	99,949
1919-20.				
Apples	Brl.	7,026	590,015	46,085
"	Boxes	4,441	1,240,641	36,353
"	Bskts.	175	17,544	1,917
Pears	Boxes	741	106,199	5,668
Peaches	"	1,159	132,444	10,675
Plums	Bskts.	715	211,638	6,444
Tomatoes	"	816	134,058	9,632
Small fruits	Pkgs.	1,670	167,848	24,913
Grapes	Bskts.	333	385,602	18,055
			Total.....	159,742

ENTOMOLOGICAL BRANCH.

The officers of the Entomological Branch have been actively engaged during the year. Investigations on field crop and garden insects, forest and shade tree insects, fruit tree and bush fruit insects, household and stored product insects, live stock insects, as well as insects affecting public health, have been continued. In addition, studies have been made on the natural control of insects and important investigations conducted in developing new insecticides and methods for the control of injurious species. The officers in charge of the field laboratories of the branch in the various provinces are every year becoming more recognized by farmers, fruit-growers and others, as expert advisors in matters relating to insect control.

Under the direction of the Dominion Entomologist the regulations under the Destructive Insect and Pest Act have been administered in so far as these refer to insect pests. The following amendments to the regulations referring to insects were passed during the year.—

By Order in Council dated May 19, 1919, the importation into Canada is prohibited of all corn fodder, or cornstalks, whether used for packing or otherwise, green sweet corn, roasting ears, corn on the cob or corn cobs, from the counties of Essex, Middlesex, Norfolk and Suffolk, in the state of Massachusetts, and also from the counties of Schenectady, Saratoga, Montgomery and Albany, in the state of New York, two of the United States of America. This prohibition shall not extend to shipments of corn transported through the quarantined areas on a through bill of lading. This amendment was passed owing to the danger of introducing into Canada with such importations, the very destructive European corn borer, *Pyrausta nubilalis* Hbn, which has become established in the states mentioned.

By Order in Council dated November 28, 1919, no apple stock of any description, including nursery stock seedlings, scions, buds and grafts, shall be removed from that area included within a radius of five miles of the post office of the town of Wolfville, in the county of Kings, province of Nova Scotia, unless the same is accompanied by a certificate of inspection signed by an authorized inspector, which states that the said stock, seedlings, scions, buds or grafts have been duly treated in accordance with the instructions of the Department of Agriculture and is free from the apple sucker, *Psyllia mali* Schmidberger. This new European pest was discovered in the summer of 1919. The above regulation has been passed in order to prevent its further spread on infested scions, nursery stock, etc.

As consulting zoologist, the officer in charge of this branch, has devoted much study to the conservation of wild life generally in Canada. The economic value of our fur-bearing animals has been given serious thought and methods of protection advised.

Division of Field Crop and Garden Insects.

Important studies were made by officers of this division of such insects as the root maggots, Colorado potato beetle, Hessian-fly, white grubs, and other field crop and garden insects. The value of corrosive sublimate for controlling the cabbage root maggot was demonstrated under commercial conditions both in Eastern and Western Canada. Garden and greenhouse insects of various kinds also received the attention of officers of this division.

Serious outbreaks of such field crop insects as cutworms, locusts, western wheat-stem sawfly, beet webworm and potato leaf hopper, occurred in various localities, all of which were investigated and control measures advised.

Division of Forest Insects.

The work of this division has been directed chiefly towards problems of bark beetle control in British Columbia, balsam disease investigations in Quebec and New Brunswick, and the development of the system of forest sample plots.

Bark beetle control work in British Columbia consists of modified logging operations so as to destroy the destructive beetles which hibernate in the bark during the winter. Extensive surveys and studies have been made in connection with balsam disease investigations. Insect outbreaks have caused such enormous losses in our balsam pulpwood reserve in Eastern Canada during recent years that the investigation of preventive measures is of the greatest importance.

The development of the forest sample plots is proceeding in a satisfactory manner. We have now fifteen plots established, including over ten thousand trees described and under observation.

Division of Foreign Pests Suppression.

This division has to do with the carrying out of the regulations under the Destructive Insect and Pest Act in so far as insect pests are concerned, as well also as the suppression of foreign pests imported into Canada. The work during the past year may be briefly stated as follows:—

Brown-tail moth suppression in New Brunswick and Nova Scotia; inspection and fumigation of foreign nursery and other plant products entering Canada; the establishment and maintenance of quarantines and embargoes against foreign pests; the examination and inspection of nursery stock for export to foreign countries.

Division of Systematic Entomology.

Since the appointment of a definite officer to have charge of the national collection of insects, satisfactory progress has been made in arranging the numerous collections of insects which have accumulated during past years. Large numbers have been classified and placed in their correct systematic position in the national collection which is now assuming very important value and size. During the year a number of prominent entomologists have visited the branch for the purpose of studying our collection. The officer in charge of the collection has rendered assistance in the identification of species to teachers and others interested in insect life.

Field Laboratories.

Annapolis Royal, N.S.—The officer in charge of this laboratory is also in immediate charge of the insecticide investigations of the branch. During the year he has considerably improved the value of important insecticides particularly applicable to the apple and the potato. Successful orchard and field demonstrations have impressed the growers of the Maritime Provinces of the importance of this work and as a direct result larger and better crops have been grown. Through the studies of our officers at this laboratory in developing improved insecticides it is estimated that important financial savings to fruit-growers and farmers will now result as well as still greater production.

Fredericton, N.B.—The various causes of insect outbreaks have received close investigation at this laboratory. The study of natural control of such important insect pests as the fall webworm, the forest tent caterpillar and the spruce budworm has continued. A report resulting from eight years of study on the former insect is now nearing completion. Important parasites of the

brown-tail and gipsy moths which were established in New Brunswick and Nova Scotia have been recovered during the year; one important parasite has increased considerably. During the year collections of an important parasite of the western tent caterpillar were made for colonization in Alberta.

Hemmingford, P.Q.—Investigations conducted from this laboratory on the comparative value of liquid sprays and dusts have been continued. Demonstrations in the orchard and in the field have attracted considerable attention. Important orchard insects, such as the apple curculio and the plum curculio, have received special attention.

Vineland Station, Ont.—Life-history studies of the pear psyllia, commenced in 1917, were completed during the year, and valuable data on its control obtained. Investigations on the strawberry weevil and the potato leaf hopper were begun and satisfactory progress made. Experiments with various insecticides on the control of the cherry aphis, apple aphids, onion thrips, tarnished plant bug and blackberry leaf miner, were conducted.

Strathroy, Ont.—The important lines of investigations carried on at this laboratory were the continuation of life-history studies of white grubs and other soil-infesting insects, demonstrations of insecticides valuable for controlling the Colorado potato beetle, and experiments on the control of the potato leafhopper. An infestation in western Ontario of the Hessian fly in fields of wheat received attention.

Treesbank, Man.—Owing to a very serious outbreak of locusts in the southwestern sections of Manitoba and southeastern Saskatchewan, the officer in charge of this laboratory devoted the major portion of the summer to visiting locust-infested areas, giving advice to farmers, and demonstrating the value of poisoned baits and other control measures. Outbreaks of other field crop insects, such as cutworms, western wheat-stem sawfly, sugar-beet webworm, etc., were investigated.

Saskatoon, Sask.—The locust outbreaks in this province, like those in Manitoba, necessitated the attention throughout the growing season of the officer in charge of this laboratory. Many farmers' meetings were held and definite instruction given regarding the control of these destructive insects. Our officers worked in close co-operation with provincial officials. As time permitted, investigations were made on insects affecting live stock.

Lethbridge, Alta.—Cutworm studies occupied the attention of the officer in charge of this laboratory. In 1919 a very serious outbreak of these caterpillars occurred in Alberta; in fact probably the most extensive outbreak in the history of the province. Many thousands of dollars' worth of growing crops were destroyed, particularly by the pale western cutworm.

Vernon, B.C; Agassiz, B.C.; Victoria, B.C.—The officer in charge for British Columbia has made his headquarters at Vernon. From this latter laboratory important investigations in the control of grass, vegetable and fruit tree insects were conducted. At the Agassiz laboratory the natural control of the fall webworm, forest tent caterpillar, and the spruce budworm was studied further. From the Victoria laboratory the main investigations have been on important insect enemies of small fruits.

MOSQUITO INVESTIGATIONS IN BRITISH COLUMBIA.

Under the direction of the chief officer of the branch, a preliminary investigation of the economic importance of mosquitoes in the Fraser valley of British Columbia was undertaken by a special assistant. Life-history studies were made of the various kinds of mosquitoes inhabiting the region investigated. Owing to the importance of this work to the live stock and dairy industry, lumbering industry, small fruit industry, in fact to the public generally, this work is to be continued.

The following publications have been issued from the Entomological Branch during the year:—

Entomological Bulletins:

No. 16. The Apple Budmoths and their Control in Nova Scotia. By G. E. Sanders and A. G. Dustan.

No. 17. The Fruit Worms of the Apple in Nova Scotia. By G. E. Sanders and A. G. Dustan.

Entomological Circular:

No. 12. Directions for Collecting and Preserving Insects. By J. H. McDunnough.

Crop Protection Leaflets:

No. 11. The date on which it is safe to reseed fields in the Prairie Provinces after they have been devastated by cutworms. By E. H. Strickland.

No. 12. The Beet Webworm. By E. H. Strickland and N. Criddle.

In addition to the above publications the officers of the branch have contributed articles in *The Agricultural Gazette of Canada* as well as in the technical journals, such as the *Canadian Entomologist*. A special report on the Lepidoptera collected by the members of the Canadian Arctic Expedition was prepared by Mr. Arthur Gibson and published in volume III of the Report of the Expedition. Likewise, a report on certain of the Coleoptera brought back by the expedition was prepared by Dr. J. M. Swaine and published in the same volume.

DEATH OF DR. HEWITT.

In the death of Dr. C. Gordon Hewitt, Dominion Entomologist and Consulting Zoologist, the department lost a very able officer. During his eleven years of service he developed the Dominion entomological service from a very small division attached to the Experimental Farms Branch, to an important separate branch of the Department of Agriculture.

THE INTERNATIONAL INSTITUTE BRANCH.

During the year a large number of correspondents were furnished with statistical information on the world's crops and live stock, trade in agricultural products, and prices. A great deal of information was sent to correspondents on agricultural co-operation and rural economy in general, including analyses of legislation passed by the different provinces of Canada. The Government of Switzerland was provided with extensive information on irrigation, rural construction and other rural engineering work in Canada. An inquiry was made as to the work done in the different provinces and agricultural colleges to promote agricultural bookkeeping among farmers. Statistical data, covering all phases of Canadian agriculture, was furnished the institute for use in the "International Year Book of Agricultural Statistics" for 1918. The institute was, as usual, kept informed of everything of interest concerning Canadian agriculture, including the progress of the crops and the results of experimentation.

The Library.—During the year 1,311 bound volumes were added to the library, making a total of 7,633. An average of 749 pamphlets was received every month.

Seven thousand, four hundred and twenty-four cards were received from the Library of Congress and these, together with cards typed in the library, brings the number of cards in the catalogue up to 207,525.

An average of 932 periodicals was received every month. These include all periodicals indexed in the Agricultural Index. This branch has undertaken to co-operate with the H. W. Wilson Company to the extent of sending them a monthly list of publications of the federal department which are suitable for entry in the Agricultural Index.

Annotated lists of new books received in the library have been sent out bi-monthly to a mailing list of 225 persons.

Valuable accessions include a complete set of the International Catalogue of Scientific Literature, the publications of the Carnegie Institution of Washington, the publications of the Carnegie Endowment for International Peace, etc.

An analysis of the contents of the Library show the following:

Agriculture:			
General works	7 sections.	Sociology	168 sections.
Bulletins (series	12 "	including—	
Reports of Departments	23 "	Sessional papers	44 "
Reports of societies	8 "	Statistics	42 "
Reports of Congresses	1 "	Economics	23 "
Experiment stations	4 "	including—	
U.S. D. A. publications	52 "	Land Settlement	1 "
U.S. Exper. Stations	81 "	Cost of Living	1 "
Soils	9 "	Dairying	7 "
Diseases and pests	9 "	Bees	2 "
Crops	9 "	Hunting and fishing	2 "
Fruit and forestry	13 "	Veterinary medicine	11 "
Horticulture	7 "	Home economics	6 "
Live Stock	22 "	Co-operation	7 "
Bibliography	13 "	Agricultural credit	4 "
Reference works	11 "	Science	54 "
Periodicals	197 "	Landscape gardening	1 "

The above table does not include publications on roads, water supply, housing problems, nutrition, geography and history, rural schools, agricultural education, statutes, etc.

The growth of the library has necessitated additional rooms and two more have been allotted—one to be used as a periodical and reading room and the other as an additional stackroom.

One thousand, six hundred and ninety-three publications were loaned during the year. This does not include use of the library by persons who consulted the publications on the premises.

THE PUBLICATIONS BRANCH.

The Publications Branch functions as a connecting link between the federal Department of Agriculture and the farmers of Canada. Among its activities are the publication of the *Agricultural Gazette of Canada*, the preparation and editing of various bulletins, and the distribution of the publications of the department to the regular mailing lists and on request from farmers.

"THE AGRICULTURAL GAZETTE."

The *Agricultural Gazette* presents not only the activities of the federal department but it announces agricultural policies and records the major activities of an agricultural nature in the provinces. During the past year the *Gazette* has come into more prominent view than ever before. At the conference of deputy ministers recently convened in Ottawa a resolution was passed recommending that it continue to fulfil its function, namely, that through it provincial officials might learn what methods and policies were being worked out in the sister provinces and by the federal department in order that duplication of work might be avoided and that the results of experiments might become widely known to agricultural officials.

MAILING LISTS.

The mailing list of this branch has reached a total of 244,000 names and is divided into seven main subject lists and a number of minor lists. The main lists contain the names of persons desiring publications on field crops, live stock, dairying, poultry, gardening, bees, and tobacco. The names with addresses are embossed on metal stencils from which the entire lists, or any number of them, can be mechanically addressed without duplication. The lists are under constant revision owing to removals, extension of rural routes, and changes of occupation. During the past summer local postmasters in many localities have co-operated in this revision, which has necessitated the cancelling of 29,000 names and changing the addresses of 7,100 persons. Practically 22,000 new names were added and the total envelopes addressed were about 1,688,000. The minor lists include egg producers, seed dealers, drovers, banks, school inspectors, agricultural officials, teachers, and others to whom information is periodically addressed.

In addition to our regular lists we have a number of separate lists sent in by the following branches of the department: Live Stock, Seed, Entomological, Dairy and Cold Storage, and Fruit Branch. There are thirty separate lists containing 16,000 names.

In May, 1919, the Dairy Branch issued its first weekly report, which was sent to a list of 158 English names. When this report was discontinued in December the list then consisted of 420 English and 83 French names. Over 150,000 envelopes were addressed for this list. The Dairy Branch also issued a monthly news-letter to cheese factories, creameries, cheese boards, and those interested in the dairy industry. It was first sent out in October and the list includes about 2,200 English and 2,000 French names. Over 23,800 envelopes have been addressed for this list. The Entomological Branch now sends a monthly news letter principally to members of its staff situated at various points in Canada.

A form letter has been sent out to the secretaries of united farmers' clubs in Ontario, grain growers' locals in Manitoba, Saskatchewan, Alberta, and the secretaries of farmers' institutes in British Columbia, asking for a list of the members in each local. These lists were compared with the names of our mailing lists and those not receiving our bulletins were given the mailing list application card.

DISTRIBUTION.

During the year over 200,000 market reports have gone out to special mailing lists. These reports, prepared by the Dairy and Cold Storage Branch and by the Poultry Division of the Live Stock Branch, are distributed to various producers, dealers, and officials engaged in the production and distribution of these commodities, also to the agricultural press of the Dominion.

There were distributed from this branch 2,400,000 copies of publications in the twelve-month period. Of these, 2,244,000 were sent to the mailing lists and the remainder in reponse to requests. In the tabulated statement which follows there appears a detailed report of the distribution work of the branch.

	To Mailing Lists.	Requests.
Reports—		
Minister of Agriculture	332	260
Agricultural Instruction Act	1,025	3,450
Dominion Experimental Farms	2,065	1,230
Veterinary Director General	2,197	221
Five Monthly Fruit Crop Reports	22,725	280
	28,344	5,441
Bulletins—		
Potato in Canada. B. 90 (French)	51,726	3,460
The Strawberry and Its Cultivation in Canada. No. 92	117,946	3,800
The Preservation of Fruit for Home Use. 93	4,670	5,050
Farm Weeds. 36 SS	140,794	
Flue-Cured Tobacco in Canada	1,440	1,020
The Use of Coarse Grains for Human Food. 40 SS	8,400	1,120
Summary of Three Years' Experiments on the Tobacco Station at Harrow. 41 SS	965	410
A Guide in the Study and Improvement of Plants and Seeds	3,155	613
First Canadian National Poultry Conference	3,155	410
The Apple Bud Moths and Their Control. (Popular Edition) in Nova Scotia. B. 16	4,000	70
The Fruit Worms of the Apple in Nova Scotia. B. 17 (Popular Edition)	4,000	70
Warble Flies (H. of A.) 27	2,372	
	342,623	16,023
Circulars—		
Every Gardener His Own Seed Grower. Part II C. 17	198,629	2,220
Directions for Collecting and Preserving Insects. C. 12	420	620
The Care of Cream for Buttermaking. D.C. 26	865	3,750
Yield and Relative Value of Some Dairy Products. D.C. 27	37,346	1,600
The Best Varieties of Grain. C. 16	31,076	360
	268,336	8,550
Seasonable Hints	753,062	6,230
Market Reports—		
Daily Market Report (Weekly May to December)	14,607	
Dairy News Letter (Monthly)	23,802	
Eggs and Poultry Market Report Weekly	187,711	
	226,120	
Miscellaneous Circulars—		
European Corn Borer	21,645	160
Seed Branch Circulars (32)	22,712	
Bankers' Competition Circular	298,900	
Press Notices	22,598	
	365,855	160
Pamphlets—		
Publications Index Book. P. 7	865	10,258
Value of Castration and Docking. P. 16	2,340	2,360
Policy Regarding Pure Bred Rams. P. 19	865	2,770
A Directory of Breeders of Pure Bred Sheep and Goats. P. 17	865	950
How to Make and Use Hotbeds and Cold Frames. (French)	4,097	
Some Varieties of Tobacco Recommended for the Province of Quebec. P. 20 (French)	2,585	
The Construction and Care of Tobacco Seed Beds in the Province of Quebec. (French)	2,637	
Tomato and Mushroom Culture and Forcing Rhubarb in winter. P. 22	6,200	5,800
Cabbage and Cauliflower Culture. P. 23	5,892	7,120
Asparagus, Celery, and Onion Culture. P. 24	3,707	4,960

—	To Mailing Lists.	Requests.
Pamphlets—Concluded.		
Bean Anthracnose. P. 25	112,600	3,900
Melon Culture. P. 26	3,707	6,000
The Cultivation of Some Staple Vegetables. P. 27	3,707	4,800
The Rod Cultivator. P. 28	28,916	4,650
List of Publications	8,100	52,000
	187,103	105,568
Reports	28,344	5,441
Bulletins	342,623	16,023
Seasonable Hints	753,062	6,230
Pamphlets	187,103	105,568
Circulars	268,336	8,550
Announcements and Application Cards and Posters	365,855	160
Market Reports and News Letters	226,120	
Agricultural Gazette	72,679	3,260
	2,244,122	145,232

The whole respectfully submitted.

S. F. TOLMIE,
Minister of Agriculture.

APPENDIX I.

CONFERENCE OF REPRESENTATIVES OF FEDERAL AND PROVINCIAL DEPARTMENTS OF AGRICULTURE.

Held at Ottawa, March 17 to 19, 1920.

In March, 1920, a conference of representatives from the provincial Departments of Agriculture and of the various branches of the federal Department of Agriculture was held at Ottawa in order to consider ways and means of bringing about greater co-operation and co-ordination in the efforts of the federal and provincial departments, to discover means to remedy any overlapping in the work of the two organizations, and in general to discuss plans for the furtherance of the agricultural industry in this country.

All the provinces, with the exception of New Brunswick and British Columbia, were represented, the provincial representatives being listed below:—

Alberta—Mr. H. A. Craig, Deputy Minister.
Saskatchewan—Mr. F. H. Auld, Deputy Minister.
Manitoba—Mr. J. H. Evans, Deputy Minister.
Ontario—Mr. B. Roadhouse, Deputy Minister; Dr. McGillivray, Ontario Veterinary College, (President); Prof. Zavitz, O.A.C.; Prof. W. Toole, O.A.C.; Mr. Hodgetts, Mr. L. Wilson.
Quebec—Mr. A. Grenier, Deputy Minister; Mr. Roy.
Nova Scotia—Prof. Cumming, Secretary for Agriculture.
Prince Edward Island—Mr. Boulter.

Many representatives of the federal Department of Agriculture attended at the conference, which was presided over by Dr. J. H. Grisdale, Deputy Minister, and the following officers took part in the various discussions:—

Experimental Farms Branch—Mr. E. S. Archibald, Director; Dr. F. T. Shutt, Dominion Chemist; Dr. C. E. Saunders, Dominion Cerealist; Mr. W. T. Macoun, Dominion Horticulturist; Dr. M.O. Malte, Dominion Agrostologist; Mr. Jno. Fixter, Supervisor of Illustration Stations; Mr. R. J. Hutchinson, Flax Specialist.
Live Stock Branch—Mr. H. S. Arkell, Live Stock Commissioner; Mr. W. R. Reek, Assistant Live Stock Commissioner; Mr. A. McMillan, Chief, Sheep and Goat Division.
Health of Animals Branch—Dr. F. Torrance, Veterinary Director General; Dr. G. Hilton, Chief Veterinary Inspector.
Seed Branch—Mr. G. H. Clark, Seed Commissioner; Mr. J. Simard, District Seed Inspector for Quebec.
Fruit Branch—Mr. W. Baxter, Fruit Commissioner; Mr. P. J. Carey, Fruit Packing and Orchard Specialist.
Publications Branch—Mr. J. B. Spencer, Editor *Agricultural Gazette*.
Dairy and Cold Storage Branch—Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner.

A programme was prepared covering a number of subjects which it was thought could be profitably discussed, and during the three days which the conference occupied consideration was given to many agricultural questions in which it was thought changes beneficial to Canadian agriculture might be brought about.

The relation of the work of the Experimental Farms Branch to that of the provincial Departments of Agriculture received a great deal of consideration, as did also the place of the Illustration Stations in the agricultural efforts of each province. As a result a resolution was passed recommending the formation in each province of an Advisory Board, consisting of representatives of the federal and provincial department concerned, who should consider and report upon all schemes for the placing of new Experimental Farms and Illustration Stations in that province, and also upon new lines of work to be carried on. It was considered that the experimental work at present carried on by the various agricultural colleges should not be interfered with, but it was recognized that this should not be extended unduly to conflict with that carried on on the Experimental Farms.

One of the sessions of the conference was taken up with the consideration of ways and means of encouraging young men to enter the veterinary profession in this country. It was pointed out that the outlook in this regard at the present time was not very bright as attendance at the veterinary colleges was decreasing year by year and the Veterinary Director General asked that the provincial departments do all in their power to arouse the interest, as much as possible, of young men from their provinces towards this profession.

The recently inaugurated Accredited Herd System was also discussed and all the provincial representatives promised their active support to the Veterinary Director General in operating this system satisfactorily.

The live stock industry was discussed from all angles with a view to delimiting as far as possible the various phases of this industry which would be considered as part of the work of the federal department and those which could be considered part of the work of the provincial departments. It was agreed that, roughly speaking, all matters in connection with live stock production should be under the control of the provincial departments, while live stock marketing, transportation and kindred phases of the situation should be under the control of the Dominion Live Stock Branch. The Live Stock Commissioner presented a draft policy for the encouragement of the live stock industry in this country which was favourably received by the provincial representatives.

As to the fruit industry it was thought that very little serious overlapping took place between the work of the federal and provincial departments, some few minor details being brought out whereby improvement could possibly be effected.

The Seed Branch outlined a new scheme for the carrying out of what will be known as threshed grain competitions and which will, in some measure, take the place of the old field crop competitions and seed fairs which have formerly been held in the provinces and for which subventions have been received from the federal Department of Agriculture. These recommendations were well received by all the provinces, with the exception of Ontario.

The results that have been achieved by the Fibre Division of the Experimental Farms Branch in fostering the growing of the fibre flax industry in this country were outlined by the chief of that division, and the deputy minister for Ontario (the only province in which this industry is carried on to any great extent) stated that the present method of encouraging this industry was satisfactory to that province.

The provincial deputy ministers promised to appoint some officer in each of their departments to be responsible for providing material for the *Agricultural Gazette* and to act as associate editors for that publication.

The question of the entering of Government-owned stock at live stock shows was discussed at some length and the meeting came to the conclusion that there were no serious objections to such stock being exhibited, provided they had been bred by the department showing them.

With reference to cow testing, the Dairy and Cold Storage Commissioner said that some of this work was carried on by the provincial departments and the federal department was willing to hand it over to the provincial department entirely when this was considered necessary. He also outlined briefly the work that had already been done and was projected in the grading of dairy produce, especially for export. It was agreed that grading for export was a function of the Dominion department, while the grading for home consumption could be looked after by the provinces.

Other questions considered at the conference were the necessary measures to be taken for the prevention of losses of sheep and calves through the depredations of wolves, dogs and coyotes, and it was decided to get all information on this subject collected and published in a convenient form. The last question discussed was the expected grasshopper plague in the western provinces and the Acting Dominion Entomologist gave an outline of the plan which his branch was recommending.

REPORT

ON THE

AGRICULTURAL INSTRUCTION ACT

1919-1920

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 15a—1921.]

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REPORT

ON THE

AGRICULTURAL INSTRUCTION ACT

FOR THE FISCAL YEAR 1919-20

Tabled in pursuance of Section 8 of the above-named Act.

INTRODUCTION.

The Intention and Purpose of the Grant.

Under the Agricultural Instruction Act, a Dominion grant of $1,100,000 is divided annually between the provinces for the purpose of aiding and advancing the farming industry of Canada. The grants to the individual provinces for the year covered by the report were as follows:—

Alberta	$ 66,965 62
British Columbia	69,199 06
Manitoba	77,113 11
New Brunswick	64,110 80
Nova Scotia	81,716 69
Ontario	336,303 26
Prince Edward Island	31,749 22
Quebec	271,113 76
Saskatchewan	81,728 48
Veterinary Colleges	20,000 00
	$1,100,000 00

The grant is intended to supplement provincial appropriations and is made with a view to enabling the provinces, by means of the additional funds thus placed at their disposal, to finance and carry out instructional efforts in the interest of agriculture in a more extended and comprehensive manner than would otherwise be possible.

No narrow boundaries are set to limit unduly the application of the grant. The general requirements of the Act are that the moneys shall be expended in promoting education, instruction and demonstration. The precise methods of application are left to the provinces to determine in accordance with their individual needs. Consequently great latitude is allowed as to the nature of the undertakings to receive assistance.

The founders of the policy which the Act brings into practice believed that, in order to promote rural effectiveness, better farming methods were needed in the first place; second, that more adequate educational facilities suited to rural life should be provided, and third, that country home environment should be improved and made more congenial. The promotion of these objectives would, it was believed, result in a greater measure of prosperity and contentment for the farming community.

The first phase of the project contemplated the conveyance of up-to-date information to the adult as to the best methods and practices connected with farming. All practical forms of extension and demonstration were contemplated under this head. The second phase had to do with the education of country youth. It presents two aspects, the scholastic and the vocational. In order to bring the scholastic aspect more into line with country environment, elementary agricultural teaching was introduced. The concomitants of this movement were the school and home garden, boys' and girls' club work and the school fair. For the development of these undertakings and for the preparatory training of teachers the grant is largely responsible. The development of the vocational phase includes the increased efficiency of colleges of agriculture, and the provision in certain provinces of vocational agricultural schools of a lower grade than the colleges, together with special departments in high schools devoted to the requirements of agricultural students. With the placing of adequate educational facilities within the easy reach of all country boys and girls, which is the goal aimed at, comes the assurance of permanent benefit to agriculture and to those engaged in it.

For the advancement of country life the grant also makes provision. Chiefly through the Women's Institutes, instruction is provided in household science, domestic art, sanitation, home nursing and similar subjects. The fact is recognized that the family and social life of the rural population possess an importance not to be lost sight of. Along with the development of agriculture as an economic pursuit must go its development as a mode of life. With the promotion of better farming, should go hand in hand efforts for the advancement of education, co-operation, family welfare, health and moral ideals, these working together for the highest type of rural citizenship.

The schedules of allotment of the grant of 1919-20 are given below, the same having been incorporated in the agreements with the provinces for the year in question:—

ALLOTMENT OF THE GRANT OF 1919-20

PRINCE EDWARD ISLAND

Agricultural Buildings—	
Equipment and maintenance	$ 1,725 00
Director and agricultural representatives	5,800 00
Short courses	300 00
Drainage and soils	1,300 00
Live stock and dairying	3,900 00
Poultry, horticulture, bee-keeping, and co-operative marketing	1,700 00
Women's Institutes	3,510 00
Agricultural instruction in public and high schools, training of teachers, allowances, grants, maintenance of Rural Science Department, Prince of Wales College	11,500 00
Contingencies, including clerical assistance	2,014 22
	$31,749 22

NOVA SCOTIA

COLLEGE OF AGRICULTURE

1. Science building—Interest and Sinking Fund	$ 8,000 00
2. Salaries and maintenance	23,000 00

DEMONSTRATION AND INSTRUCTION.

3. Agricultural representatives	12,000 00
4. Short courses	1,000 00
5. Dairying	5,618 54
6. Poultry	1,500 00
7. Bee-keeping	71 30
8. Drainage and soil survey	1,600 00
9. Soils and fertilizers	2,118 55
10. Field crops	1,191 61
11. Fruit growing	2,000 00
12. Women's work	2,500 00
13. Entomological work	8,500 00

ELEMENTARY AGRICULTURAL EDUCATION

14.	Agricultural instruction in Public, High, and Normal schools, teacher training, grants and allowances	10,000 00
15.	School children's exhibits and competitions	2,000 00
16.	Contingencies	616 69
		$81,716 69

NEW BRUNSWICK

1.	Agricultural schools—Salaries and maintenance	$ 1,500 00
2.	Agricultural representatives	12,000 00
3.	Bee-keeping	2,400 00
4.	Soils and drainage	5,000 00
5.	Horticulture	5,200 00
6.	Live stock	4,500 00
7.	Dairying	5,210 80
8.	Poultry	3,800 00
9.	Entomology	900 00
10.	Agricultural societies	2,800 00
11.	Women's Institutes	6,000 00
12.	Elementary agricultural education—Agricultural instruction in Public, High and Normal schools, household science, teacher training, grants and allowances	14,800 00
		$64,110 80

QUEBEC

COLLEGES AND SCHOOLS OF AGRICULTURE

1.	Grants and allowances—Macdonald College, School of Agriculture, Ste-Anne-de-la-Pocatière, Oka Institute	$75,000 00
2.	School of Veterinary Science, building and extension	5,000 00

INSTRUCTION AND DEMONSTRATION.

3.	Animal husbandry	9,000 00
4.	Poultry husbandry	18,000 00
5.	Horticultural and entomological work	31,000 00
6.	Experimental and demonstration orchards	4,000 00
7.	Dairying, educational work in cheese and butter-making	5,000 00
8.	Agricultural representatives	69,000 00
9.	Seed selection, clover plots and demonstrations	9,000 00
10.	Bee-keeping—educational work	7,000 00
11.	Drainage	6,000 00
12.	Maple industry—Maintenance of schools and allowances to students	4,000 00
13.	Short courses and lectures	9,113 76

ELEMENTARY AGRICULTURAL EDUCATION.

14.	To promote the teaching of agriculture in academies, rural and Normal schools, teacher training, school gardens	8,000 00
15.	To promote the teaching of domestic science in academies and Normal schools—Grants, lectures and inspection	10,000 00
16.	School children's exhibits	2,000 00
		$271,113 76

ONTARIO

AGRICULTURAL COLLEGES AND SCHOOLS

1.	Ontario Agricultural College—		
	(*a*) Buildings, equipment and furnishings	$40,000 00	
	(*b*) Salaries and expenses, additions to staff maintenance	15,000 00	
			$55,000 00
2.	Agricultural School and Farm—		
	(*a*) Capital expenditure	45,000 00	
	(*b*) Maintenance, purchase of stock, machinery repairs, services, expenses and equipment	15,000 00	
			60,000 00

INSTRUCTION AND DEMONSTRATION

3. Agricultural representatives, including clerical and other assistance in connection with the administration	126,000 00
4. Extension work in household science in rural communities	1,500 00
5. Co-operation and markets, educational work in connection with the marketing of farm products, including organization of co-operative societies	10,700 00
6. Demonstration and instruction in vegetable growing	12,531 92
7. Stock and seed judging short courses and Institute lectures	2,000 00
8. Women's Institute work, including courses in cooking, sewing, etc	5,000 00
9. Short courses for fall fair, field crop and poultry judges, including travelling and living expenses	3,568 08
10. Lectures on horticulture	500 00
11. Demonstrations in growing and handling fruit	1,803 26
12. Demonstrations with vegetables and hardy fruits in New Ontario	5,300 00
13. Vineland Horticultural Experiment Station experimental work	2,000 00
14. Demonstration work on soils	5,900 00
15. Bee-keeping	1,000 00
16. Instruction and special educational work in growing and handling corn	3,500 00

ELEMENTARY AGRICULTURAL EDUCATION

17. To encourage the teaching and organization of classes in agriculture; and of household science and manual training as applied to work on the farm. To provide for teaching, inspection, services and equipment in connection with such classes in High, Public, Separate, Continuation and Normal schools and in universities, in summer courses and other courses and educational gatherings; for travelling and living expenses in connection with short courses or other educational gatherings. To be available for grants to boards, teachers, and inspectors and to be paid on the recommendation of the Department of Education	40,000 00
Total	$336,303 26

MANITOBA

Agricultural Representatives	$20,113 11
Dairy Work	3,000 00
Boys' and Girls' Clubs	13,000 00
Extension Schools	20,000 00
Home Economics	13,000 00
Bee-keeping	1,000 00
Killarney Demonstration Farm	4,000 00
Soil Analysis and Survey	1,000 00
Contingencies and Miscellaneous	2,000 00
	$77,113 11

SASKATCHEWAN

COLLEGE OF AGRICULTURE

1. Staff salaries—Research and extension services	$21,476 16
2. Women's work—Homemakers' Clubs	5,500 00

INSTRUCTION AND DEMONSTRATION.

3. Co-operation and marketing	7,000 00
4. Animal husbandry	3,000 00
5. Dairying	3,000 00
6. Field husbandry	5,000 00
7. Demonstration trains	7,000 00
8. Agricultural representatives	1,476 16
9. Veterinary short course	500 00

ELEMENTARY AGRICULTURAL EDUCATION.

10. Agricultural instruction in Public, High, and Normal schools, household science; training of teachers; nature study..	24,476 16
11. School fairs..	2,500 00
12. Agricultural scholarships—Post graduate course in agriculture..	800 00
	$81,728 48

ALBERTA

Schools of Agriculture..	$38,000 00
Special work placing live stock on farms under Live Stock Encouragement Act..	7,400 00
Women's work..	9,000 00
Agricultural representatives..	10,000 00
Poultry and egg marketing..	2,500 00
Miscellaneous..	65 62
	$66,965 62

BRITISH COLUMBIA

Dry farm demonstration stations and field crops..	$ 3,000 00
Seed work..	1,000 00
Silo demonstration work..	2,000 00
Horticultural demonstrations and competitions..	2,000 00
Fruit packing and pruning schools..	2,000 00
Poultry..	1,000 00
Dairying and cow testing..	8,000 00
Bee-keeping..	7,000 00
Boys' and Girls' Clubs..	1,000 00
Agricultural Journal and Publications Branch..	6,000 00
Pathological and entomological investigations and research..	4,000 00
Miscellaneous..	199 06
Agricultural instruction in Public, High and Normal schools, training of teachers, grants..	20,000 00
University of British Columbia: Investigation and extension..	12,000 00
	$69,199 06

INSTRUCTION AND DEMONSTRATION

Between sixty and seventy per cent of the Agricultural Instruction grant is expended by provincial Departments of Agriculture on what is classed as demonstration and instruction work. This includes extension work of all kinds designed to acquaint the farmer with the latest results of experiment and scientific research and the best methods of applying same to the work of the farm in order that the general standard of efficiency may be raised and the worker receive greater returns for his labour. It includes instruction chiefly for adults but also extension work for the juvenile portion of the rural community, where such work is not under the jurisdiction of the educational authorities and not directly correlated with the work of the schools.

The allocation to undertakings of this class given by provinces, and including propaganda in the interest of women of the rural districts was as follows:—

Ontario..	$181,303
Quebec..	171,113
Manitoba..	77,113
Saskatchewan..	33,300
Alberta..	29,000
British Columbia..	36,200
Nova Scotia..	38,717
New Brunswick..	48,810
Prince Edward Island..	28,514
	$644,070

It should be noted that in the provinces of Quebec, Nova Scotia, Saskatchewan and Alberta the allotment to colleges and schools of agriculture assists materially the extension work of those institutions. While the proportion cannot be definitely stated, the total sum devoted to instruction and demonstration is somewhat in excess of the figures given above.

It was laid down as a principle at the inception of the grant that under the general heading of instruction and demonstration the grant might be expended on any or all of the following undertakings:—

"To provide for the salaries and expenses of provincial officials or agents whose duty it should be to direct, instruct or inspect along any line of agricultural instruction, including located county or district agricultural representatives, demonstrators or instructors, and travelling instructors.

"To provide for demonstrations tending to encourage and assist the rural population to better living and more profitable methods of work." This included the organization of Women's Institutes and the giving of instruction to women in household science or any line of work connected with rural life or any agricultural pursuit.

"To provide short courses in all lines of agricultural work."

The various lines of work in the sphere of instruction and demonstration to which specific allocations were made for the year under consideration are given in the schedules of allotment for the respective provinces. A brief review of the leading activities, which are in the main similar to those of previous years, is given by provinces.

Agricultural Representatives

Forty-five per cent of the total allotment under instruction and demonstration is absorbed in connection with the agricultural representative organization.

The distribution of the grant for this purpose was as follows:—

Ontario	$126,000
Quebec	69,000
Manitoba	20,113
Saskatchewan	1,500
Alberta	10,000
Nova Scotia	12,000
New Brunswick	12,000
Prince Edward Island	5,800
	$256,413

Ontario has a resident departmental representative in almost every country and district in the province. There were some forty-five men acting in this capacity during the year. They form the chief extension medium of the department. The cost of the service is met from the federal grant up to the extent of the appropriation and the balance from provincial funds.

In the province of Quebec there were during the year thirty agricultural representatives' offices in operation. Special attention is given to the supervision of societies and clubs co-operatively owning breeding animals, to the establishment of co-operative societies and to the development of school and home gardens and school fairs. The expenditure is met by the grant.

In New Brunswick three permanent representatives and three assistants are employed, and the entire work is financed by the grant. The work of the year included sixteen sheep-dipping demonstrations, numerous farmers' meetings, short courses for junior farmers, potato spraying demonstrations, judging field crop competitions, judging at fairs and the organization of poultry clubs and fairs.

British Columbia employs one district agriculturist who functions to a certain extent as an agricultural representative.

Prince Edward Island has an agricultural representative and a director of agricultural instruction who undertakes work of a nature similar to that of a representative.

Manitoba during 1919 had seven departmental representatives stationed in different parts of the province. Their work has to do mainly with boys' and girls' clubs, seed exchanges, live stock exchanges, field demonstrations and the control of insect pests. Part of the expenditure is met by the grant and part by the local community.

Alberta had four representatives at work during the year, located at Edmonton, Stony Plain, Sedgewick, and Grande Prairie, while an extension man for each of the three schools of agriculture undertook work in connection with the organization and conduct of poultry, calf and pig clubs and school fairs.

In the province of Nova Scotia all the agricultural representative work is paid for out of the federal appropriation. Five men were engaged in the work and two others in supplementary work. The service was considerably broken up during the year owing to resignations, but it is hoped soon to place it on a more permanent basis.

Following is an account of the principal activities coming under the head of instruction and demonstration, apart from the work of the agricultural representatives.

Other Forms of Instructional Propaganda

ONTARIO

Co-operation and Marketing

The marked development of co-operative organization that has taken place in Ontario may be attributed in no small degree to the efforts of the Ontario Department of Agriculture in this behalf, assisted by the Agricultural Instruction grant.

Five years ago, there were practically no live-stock shipping clubs in the province; to-day there are between three and four hundred such organizations shipping co-operatively, to the value of one hundred to two hundred thousand dollars annually. It is estimated that probably one-third of all shipments going through the stockyards are club shipments, and it is regarded as quite possible that within the next few years eighty-five per cent of the live stock in Ontario will be shipped in this way.

Considerable progress has also been made in the co-operative marketing of eggs and poultry. Better methods in the handling of the business of egg circles have been introduced with benefit both to the producer and consumer. A development of the work has been the establishment of stations at which the eggs collected by a number of circles are graded and the producer is paid according to grade.

Apple-orcharding in the province which is more or less of a side-line of general farming, has suffered on account of the prevailing shortage of help, and outside of the regular apple-growing districts, the apple growers' co-operative associations have not been very active. The grape growers of the Niagara district have recently formed a selling organization to dispose of their output.

A development during the year in connection with co-operative marketing was the formation of a central company for the manufacture and marketing of Ontario cheese. This company undertakes either to take over the local cheese factories or to act as a marketing agent for local factories. An auction cheese market has been opened in Montreal and reports would indicate that this radical change in the marketing of Ontario cheese will become permanent.

The co-operative marketing of wool was continued last year through the Ontario Sheep Breeders' Association as previously. The Canadian Co-operative Wool Growers, Limited, marketed a total of about 4,000,000 pounds, and of this amount Ontario

supplied 775,000 pounds. It is estimated that the total production of Ontario is about 2,500,000 pounds annually. Thus, 31 per cent of Ontario's wool was marketed co-operatively last year.

A large proportion of the co-operative work in the province is carried on through unincorporated local farmers' clubs, of which there are some twelve or thirteen hundred in the province. The great majority of these are affiliated with the United Farmers Co-operative Company, which acts as a wholesale house for these clubs. The amount of business transacted by some of these local clubs is remarkable and is proving much more valuable since many of these clubs are taking up co-operative marketing rather than confining their efforts solely to buying supplies.

With the increase of business and the consequent larger financial transactions, an increasing number of clubs have become incorporated under the co-operative section of the Ontario Companies Act. During the year there were eighty incorporations, either as share or non-share co-operative companies. One such organization, for instance, handling live stock, feeds, grains and other commodities and buying supplies, is doing business which averages about $1,000 per day.

A number of instances are observed of local organizations purchasing the local elevator, erecting a warehouse or seed-cleaning plant or conducting similar undertakings. The work being done by the provincial department in connection with better seed, more particularly potato seed, has brought about the organization of a number of potato seed associations properly equipped to handle the business.

That the co-operative idea is permeating Ontario agriculture is evidenced by the numerous instances of local co-operative endeavour which a few years ago would have been considered as outstanding. The older associations have enlarged their operations and the newer associations are entering on their work on a more sound and substantial business basis. The smaller associations are uniting their efforts through the larger organizations so that an increasing number of the functions of the middleman are being taken over by the co-operatives.

Work of the Vegetable Specialist

Comparatively little work has been done in the past by scientists looking to the control of insects and fungous diseases injurious to vegetable crops. These pests are becoming increasingly numerous, particularly in the case of the cabbage-root maggot, cabbage aphis, the tarnished plant bug, onion thrip and onion maggot, which threaten important branches of the industry. Demonstrations of control methods for these pests were conducted at central points in market-gardening districts and were well attended by interested persons. Investigations are being made with a view to securing cheaper remedies than those now in use.

A beginning was made during the year in conducting fertilizer experiments in order to demonstrate the value of high-grade chemical fertilizers of known composition and in suitable combination. Lecture courses in commercial vegetable-growing were conducted at various points, and talks given on garden topics at horticultural society meetings and school children's gatherings. At the request of the Soldiers' Aid Commission a lecture course on small holdings was held for the benefit of ex-soldiers at the Guelph Military Hospital.

Soil Survey

A survey of the soils of Ontario by the Chemistry Department of the Ontario Agricultural College has been under way for the past six years. The purpose of the survey is to classify and map out the types of soil as a foundation on which to base suitable systems for maintaining or restoring fertility. Beside making field surveys, physical and chemical analyses have been made. Following this, experiments with

crops, rotation and fertilizers are carried on either by the farmers themselves under direction, or on rented plots where more detailed work is necessary. It is expected that as a result of this work a system will be developed for replenishing fertility. A bulletin is being prepared embodying the results of the work, which has been financed from the federal grant.

QUEBEC

Demonstration Orchards

To demonstrate scientific methods of fruit-growing, the Provincial Department of Agriculture undertook, some years ago, to establish supervised orchards in fruit-producing centres, and also in other districts where conditions of soil, climate and markets were favourable. These demonstration orchards, now numbering 103 (38 for large fruits and 65 for small fruits) are provided with every necessity for their establishment and maintenance—trees, shrubs, manures, fertilizers, pruning, grafting, spraying material, etc., the owners following the instructions given by the department.

The results so far obtained from these orchards, most of which were neglected at the beginning, are sufficient to prove the correctness of the methods adopted and the possibility of making good profits out of well managed fruit culture and to encourage the development of the industry.

To promote the industry, over 90,000 fruit trees were secured and sold at low prices to association members during the last three years, the planting being done under supervision. Assistance is also given to enable associations to secure spraying materials at reduced cost. During the past two years 6,000 fruit trees have been distributed as premiums to pupils of rural schools. A great number of lectures, demonstrations and visits have been made throughout the province by the department's inspectors. In an endeavour to open up profitable markets, fruit from the demonstration orchards, specially packed, has been shipped to large consumers in France with encouraging results. With such facilities provided to the growers in the leading fruit-growing centres, in addition to the free use of a cold storage and grading machines, it is hoped that fruit culture and the fruit industry will make a degree of development in the province which may be expected from the natural advantages of soil and climate.

Entomological Work

Entomological work in Quebec, the cost of which is met by the grant, is under the supervision of a provincial entomologist, who is associated with the Horticultural Branch of the Department of Agriculture. The work consists of propaganda in regard to the control of insect pests and plant diseases, the inspection of nurseries, and the conducting of spraying experiments in connection with the Dominion entomological service. A number of publications have been distributed. Investigational work of a scientific nature in relation to certain injurious fruit insects is being carried on at Macdonald College.

Dairying

At the Dairy School at St. Hyacinthe, Quebec, six courses of instruction were provided to qualify dairy instructors and inspectors, cheese and buttermakers, milk testers and others engaged in the dairy business. Of the persons attending 174 were granted certificates as expert milk testers, while 70 buttermakers and 70 cheesemakers were granted diplomas. There are now in the province 1,061 makers certified as experts in milk testing.

To promote the butter and cheese industries a compulsory system of inspection of all factories is provided for. To this work the grant has also contributed. Each of the 1,926 factories in the province received on an average six visits during the season. Those in charge of this work report considerable improvement in the quality and uniformity of the output.

Crop Competitions

Standing crop competitions and seed grain fairs held by agricultural associations in the province of Quebec are the medium employed for giving instruction in regard to better seed and its production by selection and the use of the fanning-mill. The exhibits are judged by the department's representatives. The best local exhibits are sent to the seed grain exhibition held annually at Quebec. The standing crop competitions held during the year numbered 174, 2,656 persons taking part.

Other Demonstrations

Sixty-one demonstration fields were operated in 1919 in the various districts of the province of Quebec. They included corn for ensilage, beets, swede turnips, clover for seed, beans, wheat, barley, oats, corn, potatoes, alfalfa, and carrots.

Two clover hullers demonstrated the production of clover seed in twenty-one parishes. Demonstrations are given free of charge wherever there are less than ten farmers in a parish who have clover to thresh, provided there is not a clover huller already in the parish.

Bee-keeping

Educational work in connection with bee-keeping in the province of Quebec is carried on through the medium of apiary inspectors, who visit the bee-keepers of the province and give instruction as to up-to-date methods and the treatment of foul brood. Eighteen inspectors operated. The number of apiaries visited was 4,647. Since 1911, the number of apiaries has doubled and the honey output has trebled, indicating that good progress is being made under this method of instruction.

Drainage

Quebec encourages the underdrainage of arable lands in two ways, first by making surveys and plans, and, second, by conducting demonstrations. When an application is received from a farmer who wants to have his land drained, an instructor is sent out, who makes a survey of the farm and prepares the necessary topographical maps. This plan is explained and all the information necessary for the proper carrying out of the work is given on the spot to the farmer. The services of the instructor are free of charge, but the farmer must board him during his work and give him the help which he may require. Five or six instructors are employed in making surveys and in carrying on ditching-machine demonstrations.

MANITOBA

Dairying

The possibilities of Manitoba for the development of the dairy industry led to the establishment, three years ago, of a Dairy Branch for its assistance and encouragement. In co-operation with the Extension Service the branch furnishes speakers for meetings and short courses on dairy subjects. Two men devote the whole of their time to lecture work during the winter months, while in the summer they carry on creamery inspection, visit farmers and discuss dairy methods.

Poultry Work

A vigorous line of poultry encouragement work is conducted throughout the province. Poultry lectures are given at meetings of agricultural societies, women's institutes, boys' and girls' clubs, Normal school classes, and other gatherings. Incubators are demonstrated in schools, poultry plants are inspected, non-layers culled, and flocks scored as to quality and management. During the year, 400 flocks were inspected, totalling 15,000 birds. The entire time of one man is spent on the work, with an assistant during the winter months.

Killarney Demonstration Farm

The Killarney Farm was established under the Agricultural Instruction Act to demonstrate fruit-growing and general farm produce. It functions somewhat differently from the Dominion Experimental Farms at Brandon and Morden, dealing with more intimate and local conditions. It is hoped through this farm and others that the provincial department is establishing to secure accurate data as to the cost of production and to conduct them on a pay-for-upkeep basis, besides making them centres of contact between the department and the local community.

Agricultural Classes

Gas-engine schools to the number of forty were held at local points, the attendance ranging from thirty to fifty. Schools of this type continue to be very popular.

Two-day classes in agriculture were held at seventy places, the afternoon sessions being devoted to farming and the evening to more general topics. At these gatherings the University of Manitoba, the Social Service and the Agricultural College co-operated. Motion pictures and lantern slides were made use of.

Agricultural Societies and Exhibitions

Much effective extension work was carried out through the medium of the agricultural societies. This included the providing of judges for summer fairs, seed fairs, poultry shows, ploughing matches, standing field crop competitions and horticultural shows. In a number of cases live-stock judging and canning competitions were directed in connection with the summer fair. The Extension Service co-operated with other branches of the provincial department in arranging exhibits at the Winnipeg and Brandon Exhibitions and at the International Soil Products Exhibition.

SASKATCHEWAN

Agricultural instruction and demonstration in Saskatchewan comprises (1) the extension work of the College of Agriculture, and (2) the special activities of the Department of Agriculture in connection with co-operation and marketing, animal husbandry, field husbandry and dairying.

The cost of the college extension work is met largely from the allotment to the College of Agriculture. In its performance such mediums are employed as agricultural societies, grain growers' associations and women's institutes. Short courses of a general agricultural nature are held during the winter at various points in the province. A special course in farm tractor operation was put on at a few outside points and a course was held each month during December, January and February at the university. Short courses for farm women were carried out which included instruction to the wives of soldiers who are taking advantage of the Soldier Settlement scheme.

Better Farming Train

Seed fairs, standing field competitions, ploughing matches, poultry shows, and school exhibitions gave opportunities for bringing the college work to the people. The Better Farming Train was operated, in co-operation with the Department of Agriculture and the Canadian Pacific Railway, for five weeks in May and June along Canadian Pacific Railway lines southwest and west of Moosejaw. The train was fully equipped for giving instruction in field husbandry, animal husbandry, poultry, dairying, farm mechanics, household science, natural history, child welfare, with a play car for children and a nursery for babies. The attendance totalled 31,438 persons, comprising 10,444 men, 6,688 women, and 14,306 children.

In the interest of dairying, a dairy demonstration car was operated on certain lines of the Canadian National Railway in the spring of 1920. For this undertaking the Provincial Dairy Branch co-operated with the College of Agriculture. Herd management, feeding for milk production, individual testing and the best methods of handling and marketing dairy products were among the subjects dealt with, the lectures being illustrated by motion pictures and lantern slides.

Co-operation and Marketing

Agricultural co-operative associations are under the supervision of the Co-operation and Markets Branch of the provincial department. This branch was established in 1914, the Agricultural Instruction grant being employed in its maintenance. Since that time co-operative associations of the province have increased very rapidly in number. In 1914, 102 associations with 2,850 shareholders reported to the branch. In 1918 the number had grown to 329 associations with a membership of 15,123, while in 1919, 406 associations reported. The total business turnover of the associations in 1914 was $281,355, and in 1918, $5,278,166.

Noxious Weed Control

During the summer months, a number of field representatives were employed under the direction of the Weeds and Seed Commissioner. Their principal duties were to visit and instruct municipal officers in matters relating to the eradication and control of noxious weeds. During July short courses were held at several points in the province and at these meetings the field representatives met the municipal weed inspectors and farmers and discussed tillage matters and other factors affecting the weed situation. Particular attention was paid to the identification of weeds recently introduced, in an effort to prevent their further spread.

The field representatives also inspect plots and fields for members of the Canadian Seed Growers' Association. These fields were examined and the crops scored, the owners being advised in regard to their individual problems.

ALBERTA

The greater part of the extension work in Alberta is done from the agricultural schools and by the teachers of the schools between teaching terms assisted by departmental officials. In consequence of this arrangement, the allotment to the schools of agriculture may be regarded as financing to some extent instruction and demonstration work. The grant provides, however, for several instruction projects carried out by the department proper. Among them are the poultry and egg-marketing project, and special work connecting with the placing of live stock on farms.

Poultry and Egg Marketing

In co-operation with the Poultry Division of the Dominion Department an egg-marketing service has been established to enable farmers to sell their eggs on a quality and cash basis rather than through the country store, the object being to stimulate the industry by securing a better return for the product. An important part of the work of the poultry marketing services is the education of poultry-raisers in proper methods of breeding and feeding of poultry and caring for poultry products.

In connection with the placing of live stock on farms, the grant has contributed towards the salaries and expenses of the travelling inspectors and instructors employed under the Live Stock Encouragement Act, which provides for loans to farmers for the purchase of live stock.

BRITISH COLUMBIA

In the province of British Columbia the instruction work carried on by the Department of Agriculture during the year related to general agriculture, live stock, dairying, horticulture, egg production, injurious insects and diseases of plants and bee-keeping.

In connection with the co-operative marketing of wool, successful efforts were made to promote organization, the result being that the British Columbia Wool Growers' Association handled for the producers nearly twice as much wool as in the previous year.

The department also assisted the British Columbia Stock Breeders' Association in organizing a bull sale and a sale of sheep and hogs.

The demonstration stations at Quilchena and 105 Mile, in the dry-farming districts, continued to operate during the year. The Quilchena farm is devoted chiefly to sheep ranching, while at 105 Mile, crop production is being demonstrated.

Silo Demonstration

Demonstrations in the building and filling of silos are showing important results, a large number having been put up as the outcome of the department's efforts. During the year ten silos were built under department supervision, and several demonstrations in silo filling were carried out. Many farmers are building a second silo, and many fruit growers are finding it advantageous to adopt dairying as a side line because of the value of the manure output as a fertilizer.

Other Instructional Activities

Two additional cow-testing associations were established during the year, making a total of six. The department contributes to each supervisor's salary besides equipping the association at its inception, and supplying testers.

Boys' and girls' club competitions in poultry keeping were again organized, twenty-two such competitions being conducted, with 181 participants.

The International Egg Laying contest, in which the province has now participated for the eighth year, was conducted in co-operation with the Provincial Poultry Association, which provided the prizes, diplomas and other awards, while the grant was employed in meeting operating expenses.

The horticultural work assisted by the grant consisted of personal visits to fruit growers for advice and demonstration, institute lectures, judging at fairs, the conducting of a strawberry demonstration plot, experiments with spraying materials and methods and with orchard cover crops. The inspection of orchards for insect pests was carried on and information given as to methods of control and eradication.

In the division of plant pathology and entomology the major subjects of the season's work were the study of the life-history and control of the onion and cabbage root maggots. Educational exhibits of insect specimens were prepared and displayed at fairs and exhibitions.

The apiary inspection work necessitated an increase of three men on the inspection staff owing to the extension of the industry, its more stringent regulation, and the increasing demand for instruction. Much good work is being done in combatting foul brood and in educating and stimulating bee-keepers to adopt proper methods, thereby raising the standard of bee-keeping and increasing production. The exhibits at the Vancouver and New Westminster exhibitions were the best ever made in the province.

The cost of the Agricultural Journal and of various bulletins is met from the grant. Farming literature was supplied to a large number of returned men who are taking courses of study in agriculture, and, also, on request, to school teachers interested in agricultural work.

NOVA SCOTIA

The instruction and demonstration work of the province of Nova Scotia apart from that of the agricultural representatives relates to dairying, fruit-growing, poultry and bee-keeping, drainage, soils and fertilizers, field crops, short courses, and women's institutes. The grant is applied for the most part on the salaries of the officers engaged therein and in meeting incidental expenses.

Five short courses were conducted during the year, all being largely attended.

Soil and fertilizer demonstrations included the operation of a portable limestone crusher, as in several previous years, in order to demonstrate the value of liming soils by this method. This has resulted in three crushers being established in parts of the province where demonstrations were given. Demonstrations with fertilizers and manures were also conducted at numerous points.

The work in horticulture consisted as in previous years of demonstrations in orchard renovation and in encouraging farmers to grow garden crops.

In 1914 the Division of Horticulture undertook work in orchard renovation in several orchards of bearing age. Under an agreement with the owner the department furnishes fertilizer, spraying outfits and materials.

Some years ago thirty-five model orchards were set out by the department. These are distributed over the province, outside the fruit districts proper, for the purpose of testing varieties and demonstrating methods of culture. Valuable data has been obtained as a result.

NEW BRUNSWICK

The chief lines of instruction and demonstration work conducted by the Department of Agriculture with the assistance of the grant are those relating to live stock, dairying, horticulture, soils and drainage, poultry, agricultural societies and Women's Institutes. In every case the grant provides the salaries and expenses of the officers engaged in carrying out the departmental policies related to these activities.

Under live stock, the work includes the organization and supervision of bull clubs, sheep demonstrations and the grading and co-operative marketing of sheep and wool, and the organization of boys' pig clubs.

The dairying activities include instructional work at cheese factories and creameries, organization of dairy show, of educational competitions in butter-making, assistance at the Maritime Dairy School, assistance in the organization of co-operative organizations and in grading and marketing dairy products.

Under horticulture, instruction is given in the pruning and spraying of orchards, and in the co-operative packing and marketing of fruit, also the supervision of eleven illustration orchards and eight test orchards.

In the division of Soils and Drainage, drainage surveys are made, and drainage demonstrations given with the assistance of a ditching machine. Forty demonstration pig pastures were undertaken during the year. Also clover-huller, mustard spraying and oat smut prevention demonstrations were carried out.

The poultry branch organized thirty-six clubs for boys and girls with 475 members, besides holding a number of poultry meetings, conducting culling demonstrations and preparing educational exhibits.

The agricultural society work is largely educational, including organizing, lecturing, the promotion of co-operative effort and the supervision of field crop competitions.

Women's Institutes

Canada is the birthplace of Women's Institutes. Twenty-two years ago, a little group of countrywomen in Ontario met to discuss the question of lightening the loneliness and comparative isolation of farm life. They thought that something could be

done to make life better and brighter both for themselves and their children. They met at each other's houses at fixed intervals, not only for social entertainment but also for devising means to secure the various improvements their homes and the district required. Thus the Women's Institute came into being.

Very soon the homes and the farms showed what changes could be accomplished through the efforts of an organized band of intelligent women. This example inspired other women, and before long the Institute movement had spread through other provinces of Canada, and thence into the United States. In 1915, it reached Great Britain, by way of Wales, where Mrs. Watt, a British Columbian, started the first Women's Institute.

The Women's Institutes of Canada, with a combined membership of 70,000 persons, form the medium through which the farm home may be reached and influenced by various forms of social welfare propaganda. They are the medium for conveying instruction in household science and domestic art, cooking, nutrition, home nursing, sanitation and similar topics. They afford the women of the farm an opportunity for social intercourse, self-expression and development, often so much needed under rural conditions. Matters relating to social welfare, community welfare, education and other vital topics are considered and discussed, and the activities promoted by their means have a widely extended and highly beneficial influence.

In all the provinces, with the exception of Ontario and British Columbia, the grant meets the cost of organizing and carrying on the work of the institutes. In Ontario, however, the money is employed solely in connection with extension propaganda, being employed in meeting the cost of instructional work in household science and related subjects. Demonstration lectures and classes in cooking, canning and preserving, sewing, hygiene and other topics of special interest to women are held under the auspices of the Women's Branch Institutes, 900 in number, having a total membership of about 30,000.

The organization of Young Women's Clubs among the French-speaking population shows continued extension. From eight that were in existence three years ago the number has increased to thirty-seven with a membership of 1,907. The clubs are designed to promote a knowledge of gardening, poultry, bee-keeping and other useful occupations among young women in rural communities. Lectures on home economics and various other topics are included in the programme of instruction.

The Quebec Homebakers' Clubs, 45 in number, come under the supervision of the Household Science Department of Macdonald College. The work of these organizations continued during the year with unabated interest. Besides following various courses of study as outlined for them, the clubs interested themselves in community needs, including the providing of equipment for school lunches, donating prizes to school fairs and in contributing to the cost of school and community halls and their equipment. The work is not only of particular aid to the home but of telling value in the community generally.

The Women's Institutes of the province of Manitoba held twelve district and one provincial convention during the year to which speakers were supplied by the local department. Under institute auspices, five-day courses were held to the number of 190 in home economics, 110 in dressmaking and 90 in millinery. In canning and cooking, 325 individual demonstrations were given.

	1914.	1919.
Number of institutes	17	120
Membership	750	4,800

The Women's Institutes of Saskatchewan number 180 and have a total membership of 5,000. The Director of Women's Work, who operates from the College of Agriculture of the University, has charge of the management. A provincial convention is held annually.

The membership of the Alberta Women's Institutes was increased to over 12,000 during the year, thirty-two new branches being organized, making a total of 265.

Lecturers and demonstrators were sent out to practically every institute in the province. Short course schools in home nursing and first aid were given at fifty-four centres, with a total attendance of 3,409. These courses were given by Public Health nurses. Sewing demonstration lecture courses were also given at twenty-two centres and short courses in cookery and food values at sixteen. One hundred and sixty-eight institutes were visited and addressed by Women's Institute speakers. The subjects treated were of particular interest to women. The total attendance at lectures and courses was 21,000 women.

Nineteen constituency conferences have been held and found helpful in developing leadership and creating a fellowship through the sense of common interest.

An important feature of the work for 1919 was its campaign for the proper feeding of children. This was carried out by food exhibits at the Edmonton and Calgary fairs. Forty thousand bulletins dealing with child welfare, and the canning of fruit and vegetables, were distributed.

In connection with the better school movement, dozens of institutes elected educational committees to do work similar to that of the parents-teachers' associations. The work of the institutes was felt mainly in connection with sanitation and hygiene and aesthetic culture. In a number of cases, playgrounds were equipped, school lunch apparatus furnished. Twenty-five institutes gave prizes to students for various types of merit. One branch completely furnished a domestic science kitchen, while another donated $100 worth of books to the local school.

The Women's Institute movement in Nova Scotia dates from the summer of 1913 when the Dominion grant became available for financing the work. In that year fourteen branches were organized. In 1919 there were fifty-five active branches with a membership of 7,000. The supervision of the work is in the hands of a superintendent and an annual grant of five dollars is made to each institute.

The Women's Institutes of the province of New Brunswick number 132 and have a membership of 5,000. Eight short courses in cooking, sewing and nursing were held in the English-speaking districts and four in the French. Demonstrations were given at the summer meetings of the institutes, and a provincial convention was held.

At present there are thirty-four active institutes in the province of Prince Edward Island, with a total membership of 750. The supervisor and an assistant have charge of the work. A small annual grant is made to each institute and the expenses of delegates to the yearly convention at Charlottetown are paid. Short courses are held during the winter months for the benefit of girls and women from the rural parts of the province and lessons in cooking are given in the Charlottetown public schools.

COLLEGES AND SCHOOLS OF AGRICULTURE

When in 1912, the federal authorities determined to place public moneys at the disposal of the provinces for the benefit of agriculture, it was at once recognized that a portion of the fund might with propriety be employed in increasing the efficiency of the agricultural colleges. It was accordingly agreed that the grant might be employed in enlarging their capacity, strengthening their staff and adding necessary equipment, according to their individual needs, so that they might the better serve the purpose for which they were established. Under the Agricultural Aid Act of 1912—a preliminary measure—the sum of $106,288 was devoted to this purpose. In each province except Saskatchewan this grant was devoted to building extension and equipment. In 1913-14 the original Act was superseded by the Agricultural Instruction Act. Under the latter, the policy of assisting the agricultural colleges was continued. But in the case of Alberta, it was decided, in accordance with the desire of the provincial authorities, to assist in the maintenance of three district agricultural

schools established in that province rather than to contribute to the College of Agriculture. Likewise in the province of New Brunswick, where no college existed, a building was provided at Sussex for an agricultural school, while at the Fisher Vocational School at Woodstock provision was made for giving instruction in agriculture. In Prince Edward Island the assistance took the form of amplifying the agricultural course at Prince of Wales College. This course was later on developed as a rural science department in connection with the movement to establish the teaching of elementary agriculture in the schools.

It is encouraging to know that, from Ontario westward, every province in the Dominion now has an agricultural college, established and maintained at the public expense, for the purpose of preparing men to become either practical farmers, or instructors, scientific investigators and leaders in connection with the basic industry of agriculture.

In the east a similar service is being rendered by the Macdonald College, an institution established as a private bequest, but receiving aid from the public treasury, and by the Agricultural College at Truro, Nova Scotia, the latter serving the needs of the Maritime Provinces. Quebec province has in addition two institutions designed to afford instruction in agriculture to French-speaking Canadians, namely, the Agricultural schools at Oka and at Ste-Anne-de-la-Pocatière.

Total Allotment, 1912-13 to 1919-20

The following sums have been allocated to colleges and schools of agriculture (exclusive of veterinary colleges) under the Agricultural Aid Act and the Agricultural Instruction Act during the period 1912-13 to 1919-20:—

Province.	Agricultural Instruction Act.	Agricultural Aid Act.
Ontario	$691,313	$40,000
Quebec	483,819	20,000
Saskatchewan	160,276	15,000
Alberta	261,200	—
British Columbia	20,000	—
Nova Scotia	207,683	—
New Brunswick	65,852	—
	$1,890,143	$106,288
	106,288	
Total	$1,996,431	

A summary follows of what has been accomplished by means of federal aid under the two Acts cited, for the development of these institutions.

Ontario.—At the Ontario Agricultural College, to meet the steadily growing demand for increased building accommodation, there have been added a field husbandry building, a poultry building, a physics building and a new residence (now under construction). Federal funds were also used in the completion of the dairy barns, and in the reconstruction of the bacteriological building. Numerous staff additions have also been made.

Quebec.—Macdonald College is assisted by an annual grant from agricultural instruction moneys. None of the money being required for building purposes, the grant has been employed largely in extension work in the English-speaking districts, including school agriculture, women's work, orchard, poultry and sheep demonstrations, while a part has been used to carry on various lines of research.

At the Agricultural Schools at Oka and Ste. Anne-de-la-Pocatière increased building accommodation and equipment have been provided, and at each of these institutions the salaries of the staff have been supplemented from the federal grant

Saskatchewan.—The grant to the Saskatchewan College of Agriculture led to the development of a wide range of extension activities by that institution, besides augmenting the staff for teaching and for investigation and research work. None of the funds have been made use of for building purposes.

Alberta.—The federal grant to the province of Alberta does not assist the College of Agriculture, but is employed instead in financing the schools of agriculture, contributing towards staff salaries, supplies and equipment. Short courses and other extension activities are carried on by the schools.

British Columbia.—In 1918-19, Instruction Act moneys were allocated for the first time to the newly-organized College of Agriculture of the University of British Columbia. The grant, which was continued in 1919-20, is made as a contribution towards the cost of investigation and extension work at that institution.

Nova Scotia.—With the assistance of the federal grant, the Nova Scotia Agricultural College was enabled to enlarge its main building and to provide a science building, costing over $100,000, which is to be paid for in annual instalments. A considerable sum is used annually in supplementing staff salaries. By these means the efficiency of the college as a teaching institution has been greatly increased.

Schools of Agriculture

In agricultural schools Alberta has been the pioneer. In that province the three schools already established, although handicapped by the war, have been an undoubted success. Three more are nearing completion and will, it is expected, be open for students in the fall of 1920. By that time it is expected that the students in attendance will number from 750 to 900, which may be regarded as reasonably good in a province that perhaps has the third smallest population in the Dominion.

The experience of Alberta is that many farm boys and girls can be induced to attend schools of this kind who for certain disabilities could not attend an agricultural college. Nevertheless it is anticipated that these schools will lead many to take a college course in agriculture and thus prove a recruiting ground for the college of agriculture.

The school at Kemptville, in Ontario, is similar to the Alberta schools in its scope and intention. The Kemptville establishment will constitute a vocational residential school, with ample land for farming purposes attached, together with the necessary buildings and other equipment. The cost is financed entirely from the Agricultural Instruction grant. The main school building is now completed, and the regular two years' course in agriculture and household science will commence in the autumn of 1920. Pending the completion of the school, short courses in agriculture and household science are being offered.

ELEMENTARY AGRICULTURAL EDUCATION

General Review of the Situation

That serious deficiencies existed in the general scheme of education as applied to country children has for a long time been conceded. It has been claimed very generally that the schools were training children both through the matter taught and also in the manner of teaching it, to take advantage of town opportunities while country opportunities were ignored, thus leading to rural depopulation. It seems doubtful whether such a claim can be completely substantiated. All are ready to agree, however, that rural education should be adapted to the social and vocational needs of rural people, and should be made both broadly cultural and broadly practical,

and it is generally conceded that an appreciative study of nature and of country life should be fundamental, leading in the higher grades to vocational instruction in agriculture and home-making.

The problem facing those responsible for educational policy is to provide adequate educational opportunities for those destined for country life. This involves not only the strengthening of the rural school but the provision of such facilities as would afford the knowledge, the mental training and the general outlook needed for the development of a modern, scientific, organized agriculture.

It also involves the provision of facilities for teaching agriculture as a vocation, just as facilities are provided for the town boy and girl who desires technical instruction in the arts and crafts. That vocational training for life on the farm be placed within the reach of every country boy and girl is one of the most urgent needs of the present day in order to insure the rapid growth and permanent prosperity of Canadian agriculture. This need the centralized college of agriculture cannot hope to meet. Attempts of various kinds are being made to meet it both by Departments of Agriculture and of Education. These include special schools of agriculture, part time schools, high and consolidated schools with agricultural departments, the classes conducted by agricultural representatives, boys' and girls' clubs and similar efforts.

If the farming community generally realized the great benefits resulting from vocational agriculture, and the increasing need for applying scientific knowledge to agricultural operations, there is little doubt that there would be a universal demand for this form of instruction either through special schools or through recognized educational channels, or both.

For the promotion of school agriculture more money was requisite than most provincial departments of education could command. It was therefore decided that the grant might be employed, if the participants so desired, in assisting to finance elementary agricultural education in the schools.

Since the Act became effective, all the provinces have made progress in the introduction of this form of instruction. This does not necessarily mean teaching that is intended to be directly vocational in its object. What it involves is a recognition of the principle that the objects most intimate to the life of the rural child should be made the medium of instruction. It begins in the lower grades with what is termed nature study, or rural science, and involves a gradual progression through elementary agriculture to an acquaintance with the sciences that have a definite relationship to agricultural pursuits, and opens the way to specialization in various fields of usefulness.

For the advancement that has been made in the direction of agricultural teaching the grant is largely accountable. Besides providing special vocational schools and strengthening agricultural colleges it has assisted liberally in the training of teachers, in the introduction of nature study, school and home gardening, boys' and girls' clubs and the school fairs. In regard to the latter forms of work, it may safely be stated that no other form of agricultural instruction work brings such apparent and immediate results as that carried on through the medium of the young people through the efforts of Departments of Agriculture and Education.

Practical projects such as poultry keeping, potato-growing, pig and calf rearing, canning, breadmaking, and similar activities are easily made the medium for training the intelligence, because being actualities they are seized upon with eagerness by most boys and girls and the instruction based upon them is assimilated, remembered, and applied, in contrast with the routine lecture which remains unrealized and is soon forgotten.

The school garden has been widely adopted in all the provinces as a basis for agricultural teaching in the schools. The home garden and the home project, such as the rearing of poultry, constitute an outward extension of the same idea. The school garden is regarded as an outdoor workshop or laboratory to be made use of by the

teacher in the general education of the pupil. It is a place for doing experimental work, making observations and recording results. To boys and girls gardening is largely experimental. The knowledge required is gained at first hand as a result of the pupil's work and observation. It is, therefore, much more interesting and much more real than the knowledge gained from books.

Space will not permit even the briefest consideration of how school subjects, such as reading, spelling, composition, nature study, geography, arithmetic, drawing and all the rest can with advantage be correlated with school gardening. The garden and the experience gained therein become the great centre of reality for the child. These other subjects merely result from the different types of reaction and expression of the child mind. They are the "tools" that the child must learn to use in fashioning the "raw materials" which he daily and hourly acquires through experience or sense perception, and each is useless without the other.

The school fair is a logical outcome of school and home gardens and the boys' and girls' club development. At these fairs are exhibited the grain, roots and vegetables grown from the seed supplied, and in accordance with instruction given. Settings of eggs are distributed and the resulting fowls are exhibited. The poultry section of the school fair has become a very attractive feature with both boys and girls. Children are also encouraged to exhibit calves, colts and pigs. Canning, baking and similar competitions are introduced for the girls. Sometimes such spectacular competitions as chicken-plucking contests, athletic sports and concerts add to the interest. As a rule, the school fair is separate and distinct from the county organization, the intention being to have the boys and girls regard it as exclusively a children's organization. Prizes are offered for the various exhibits and competitions, and the movement is generally of great value in stimulating school and home garden development.

Club work for boys and girls has proved to be one of the most important lines of endeavour yet undertaken, so far as stimulating interest in agriculture and imparting information in approved methods and practices is concerned. The work is usually controlled and directed through the Department of Agriculture and is related to vocational rather than scholastic training. If club work is to take an important place in an educational way it would appear to be necessary to connect it with the work of the schools. This is in some provinces being successfully accomplished. The answer to the question as to whether such activities should be directed by the educational or the agricultural authorities depends on the facilities available for its successful prosecution. There should at least be close co-operation between the two. The practical aspects of these undertakings are of great importance, and they require for success the supervision of those having considerable technical knowledge such as the school teacher does not as a rule possess. The acre profit and kindred projects carried on by the Ontario Department of Agriculture may be instanced as affording an illustration of what may be accomplished in an educational and vocational way by competitions. Under the direct supervision of the agricultural representative they afford the young men taking part in them an opportunity to put into practice, under normal conditions, the precepts taught at the local classes conducted by these officers. No school teacher, unless well qualified to teach agriculture, could give the required instruction and supervision. At the same time the projects referred to would appear to meet fairly well the requisite conditions, which are that they should be associated with instruction, be conducted on business lines, involving record and report, and should have a profit incentive in view.

One of the first requisites of the successful teaching of elementary agriculture in the schools was the provision of courses of training for teachers. To meet the necessities of the case, special summer courses were provided and special inducements offered to teachers to attend them. In this connection the funds available under the Act rendered important assistance. By means of such courses numbers of inspectors

and teachers have been instructed in the elementary principles of agriculture without which it would have been impossible for them to deal with the subject. In the normal school courses provision has also been made in most provinces for similarly equipping those proposing to enter the teaching profession.

A recent progressive development in connection with the teaching of agriculture has been the introduction of agricultural and household science departments in high schools. This project is meeting with success in a number of instances. In Ontario the case of the Whitby High School may be cited as an example. In this school the principal was himself deeply interested in the undertaking, and such an attitude on the part of that officer may be regarded as a pre-requisite of success. At the Whitby school it was found to be necessary, in order to build up the department, to popularize the teaching of agriculture in the schools of the district it served. Accordingly steps were taken to place before the people fairly the status of agriculture in the present system of education. The publicity campaign that resulted has been continued for over three years. Any opposition that existed on the part of the farmers was found to be based on lack of information or misunderstanding of the scope of the work. Many of the most strenuous opponents have since become ardent supporters of the project.

The agricultural department of the Whitby school, in common with several other such schools, is now undertaking actual extension work among the farming community. The assembly hall, laboratory and motion picture outfit have been made available for demonstrations and lectures. As a result the community is learning to look upon the high school as an educational centre for themselves as well as for their children. The outstanding result of this excellent work is that many more children from the rural district are coming to the high school, not being satisfied, as formerly, with merely a public school education.

School consolidation is being promoted in several provinces, but generally speaking the movement advances slowly. That many rural schools as at present constituted are excellent within their prescribed limits will not be denied. But, good or bad, they do not provide those dependent upon them with more than the rudiments of an education. That this is entirely insufficient to meet the present day needs of the farming business will be freely admitted by those familiar with the wide range of knowledge that the farmer should have at his command.

Agriculture gives scope for the mental faculties in a wider field than most callings. Nevertheless, scientific agriculture is a term that still arouses a species of resentment in the minds of some who have not learned to discern the relationship of the sciences to farming operations. They still labour under the delusion that the training of the hand and the general knowledge of reading, writing and arithmetic gained at the rural school is sufficient equipment for their needs.

To secure adequate rewards for his toil, the man who tills the soil must call to his aid all the ascertained facts in relation to agriculture. He must know for example, how to maintain the fertility of his land, how to improve the yield of his crops through seed selection and the employment of the most suitable varieties, how to breed and feed his live stock so as to secure the greatest return at the smallest cost. In no other way than by the application of scientific or exact knowledge can the land be made to produce to its capacity. The words of the Greek philosopher of two thousand years ago are as true to-day as they ever were: "Agriculture is an art that renders those who understand it rich, but leaves those who do not understand it, however hard they labour in it, to live in poverty."

Probably there is not a rural school, no matter how good, that could not be improved by consolidation, where consolidation is feasible. Consolidated schools are no experiment; there is no question as to their efficiency; the cost in terms of service cannot compare with what some sections are now paying. Consolidated schools can

bring the country all the advantages now possessed by urban public and high schools, and can in addition become an effective instrumentality for redirecting and vitalizing country life.

As a whole the farming community is unconvinced of the importance of improving rural educational facilities. These must be improved before any marked advance can be made in agricultural conditions. This state of public opinion is indicated by the niggardly policy often adopted towards school expenditures, by the indifference displayed towards agricultural teaching, and by a lack of appreciation of the benefits that might reasonably be expected to flow, under suitable conditions, from the policy of school consolidation, the provision of high school courses in agriculture, of special vocational schools of agriculture, and of ample facilities for the training experts in all lines of agricultural endeavour.

Junior Extension Work, including School and Home Gardens, Boys' and Girls' Clubs and School Fairs

ONTARIO

In 1919, some 1,500 public and separate schools conducted classes in agriculture and qualified for grants. The progress made is indicated by the fact that in 1914 the number of schools qualifying was 264, with 208 school gardens and 56 home gardens. In 1918, 1,020 such schools qualified with 588 school and 432 home gardens. In 33 high schools agriculture has been introduced as an optional subject, as compared with 11 in 1914.

The school garden, as now understood, is tending to become a permanent part of the school accommodation of Ontario. The number of schools undertaking school garden work is increasing steadily year by year, as indicated by the following figures: 1914, 208; 1915, 222; 1916, 324; 1917, 466; 1918, 588; and 1919, 700 (approximate). Usually the school garden forms a part of the regular school property, but, as might be expected, there is a considerable number of gardens on land secured only temporarily. In very many cases the land was loaned to the school board free of charge. The spirit shown in such acts as this demonstrates more than words the trend of the school garden movement.

The first school fair was organized in 1909, with three schools taking part. Ten years later, 357 rural school fairs were held in the province and the pupils had 69,848 home plots and made 111,823 entries. It is estimated that about 250 people saw the first school fair in which 58 pupils took part, while in 1919, 92,600 children and 107,590 adults attended the school fairs in Ontario—a remarkable growth. Some excellent exhibits were made this year in the manual training classes, the boys taking great interest in this class of work.

During the year 1919 the Ontario Department of Agriculture, through its agricultural representatives, distributed seeds and eggs to 78,946 pupils in 3,278 rural schools of the province. These figures give some idea of the magnitude of the school fair movement in Ontario.

QUEBEC

The teaching of agriculture in the schools of the province of Quebec is aided annually from the Agricultural Instruction funds. The allotment is applied as follows:—

(1) For the promotion of school and home gardens, boys' and girls' clubs, school fairs.
(2) For special lectures to pupils and parents on elementary agricultural education, including Normal school lectures and demontrations.
(3) For special courses in elementary agriculture for school inspectors.

In addition to the above, $10,000 is distributed to domestic science schools and to institutions giving special courses in domestic science.

In the rural districts of Quebec province, the home garden has been substituted for the school garden. These numbered 22,734. In the towns and villages there were 374 school gardens, and the total number of young gardeners was 27,326. The gardens were under the direction of the 33 agricultural representatives of the provincial Department of Agriculture.

Short courses for school inspectors are held at the School of Agriculture, Ste. Anne de la Pocatière, at the Agricultural Institute, Oka, and at the Macdonald College. Instruction is given in general agriculture, horticulture and poultry work. The inspectors instruct teachers and also lecture on school gardening in the primary schools.

The Quebec Department of Agriculture supplies special lecturers in agriculture to instruct pupils of the twelve normal schools. Each of the normal schools has a demonstration garden and poultry plant.

The management of the school fairs of the province is in the hands of the agricultural representatives. The classes of products exhibited included, this year, the pigs and calves reared for the competitions organized among those attending the courses conducted by the representatives.

Macdonald College Fairs.—During the year 1919, the Quebec Provincial Department of Agriculture assumed full control of all school fairs for French children, so that Macdonald College rural school department assisted the provincial demonstrators only in the organization of fairs for English children. Assistance was given to all demonstrators who held English fairs. Altogether, twenty-five English fairs were held in the province, the cost of the work being met from the grant made to the College by the Provincial Government from Agricultural Instruction funds.

The total number of children receiving seed last spring in order to take part in these twenty-five school fairs was 5,983. All the seeds and eggs, with the exception of sweet corn and potatoes, were provided from Macdonald College. In addition, judges were supplied by the college for each fair.

During the year the household science demonstrators from Macdonald College continued the work they have been carrying on for a number of years in connection with school fairs, giving many demonstrations to rural children in cooking and sewing. Practically all the children in the province who take part in the English school fairs have now received demonstrations in these subjects. At many of these centres lectures and demonstrations were given to the boys by one of the members of the rural school department.

In the province of Quebec "Junior Breeders' Clubs" have been organized through the agricultural representatives and the co-operation of the banks. The purpose of these clubs is to interest the young people in the rearing of live stock, and to familiarize them with book-keeping and banking. The stock is exhibited at the local exhibition, the prize money being provided by the department.

MANITOBA

In this province an arrangement has been made between the Departments of Education and Agriculture whereby boys' and girls' clubs and school fairs are carried on co-operatively. The territory in charge of each school inspector is taken as the unit for organization purposes, and the inspector is recognized as the natural club leader for his district. He decides where fairs are to be held, and arranges them in circuits. He is present at all of the fairs, and either judges the school work or arranges for competent judges to take his place. The agricultural representatives, who are all familiar with club and fair work, assist teachers as desired, and the Extension Service provides from two to five judges for the agricultural and home economic exhibits.

In 1919 there were 220 central clubs, 1,200 branch clubs, and 26,500 members. Practically all of the clubs held fairs, and although over 60 per cent of the clubs encountered wet weather, the attendance of adults was over 30,000, and children over 35,000.

The Manitoba boys and girls in 1919 reared 887 pigs, 871 calves, 356 sheep, 255 colts and 4,433 chickens. Cookery and gardening occupied the attention of many girls and boys with the result that in cookery there were 9,792 exhibits as compared with 9,433 exhibits of vegetables. In the matter of vegetable canning Manitoba boys and girls have a distinguished achievement to their credit. Among the various projects canning stood third with nearly 5,000 exhibits. The showing of over 1,000 dairy exhibits suggests that dairying is receiving a great deal of attention.

During July and August ten-day short course classes in woodwork were held at fourteen places in co-operation with local trustee boards, and most of the 1,600 woodwork exhibits can be traced to these schools. There was a marked improvement in the record-keeping work in 1919 both in neatness and in the number of records, over 2,250 being shown at the various fairs. School work has always been a very important feature at the club fairs and during the year there were entered about 28,000 exhibits of actual school work. Of the 30,000 club members fewer than 2,000 failed to carry their work through to a successful conclusion and have exhibits at the fairs.

SASKATCHEWAN

Under the impetus given to elementary agricultural teaching through the Dominion grant for agricultural instruction certain definite results have been accomplished in Saskatchewan. In 1915, directors of school agriculture were appointed, and since then the various phases of agricultural instruction have been kept constantly before the public. By means of short courses, summer schools, special lectures at Normal schools, teachers' conventions and institutes and the issue of bulletins, a better understanding of the subject has been brought about. The School Agriculture branch of the Department of Education embraces activities connected with the teaching of agriculture in the public and high schools, school gardening, the beautification of school grounds, the training of teachers in the Normal schools in nature study and agriculture, the school exhibition work of the province, the rural education movement and boys' and girls' clubs.

For the high school a very definite and practical curriculum in agriculture has been prepared, designed to meet the needs of boys and girls who intend to remain on the farm and to give an agricultural and home economics content to the holders of teachers' certificates.

The instruction given through special agricultural courses is intended to help the many thousand young people in Saskatchewan who have not reached grade VIII and cannot enter high school, though they are beyond the age and scope of influence of the public school. While the practical instruction contributes valuable information, the effort is rather to broaden the entire education of the student through agriculture of a practical nature.

A summer school for teachers is held annually at the University of Saskatchewan. Teachers of agriculture are also assisted in a practical way through correspondence, visits to schools, addresses at teachers' conventions, illustrated evening lectures, and contributions to publications. A series of lectures in nature study and agriculture was given at each of the third-class Normal centres while similar work was provided at the first and second-class sessions.

Government co-operation in tree-planting and school ground improvement is another activity of this branch. Arrangements were made in 1915 with the Forestry Branch of the Department of the Interior for the supplying of free trees for shelter

planting on school grounds. The Provincial Nursery provides a supply of perennials and flowering shrubs for school ground improvement. Many districts receiving trees have also been assisted in school ground planning.

An interesting and valuable phase of work has been carried out in the boys' and girls' section of the Better Farming Train. In co-operation with the chief game guardian of the province, a special programme, consisting of lantern lectures on birds and animals was provided. The record of attendance shows that sixty points were visited at which a total of 11,670 school children, attending 388 schools, saw the train. There were 327 teachers also in attendance.

The boys' and girls' club work, which until recently was under the direction of the Extension Department of the University of Saskatchewan, has been transferred to the Department of Education and is now organized in direct connection with the School Exhibition system and the Rural Education Association movement. Early in 1919, a bulletin was issued giving general directions for the guidance of such clubs. Wherever Rural Education Associations exist, the clubs are organized under that auspices. The work, which is vocational in its aim, consisted of competitions in calf, colt, pig and poultry rearing, potato growing, gardening, canning, and judging. The enrolled membership was 2,034, and the total number of exhibitors 1,920.

In accordance with the policy originating with the Agricultural Instruction Committee, school exhibition work was, in 1915, placed under the direction and control of the Department of Education.

In this province where the value of education through agriculture is being more emphasized and better understood, school and home garden work is given an important place while agricultural projects such as poultry rearing are not neglected. Household science and manual training are subjects of study in the schools and therefore receive a large share of attention at the school fairs, but the competitions are not always confined to class-room activities. The exhibition programme is very broad, and aims at making the event a true expression of the school throughout the whole range of its activities, together with certain other subjects having to do with community betterment. As a result the outstanding characteristic of the year's work has been the increased interest shown alike by the general public, teachers and pupils.

The Rural Education Association has proven the most satisfactory organization for carrying on this work. There are 120 Rural Education Associations in Saskatchewan, 105 of which conducted successful school exhibitions. In several inspectorates the whole territory is organized into such associations and a common prize list used. In a number of inspectorates a central exhibition is held at which the prize winning exhibits from the locals are shown.

The following table shows the development of the school exhibition in Saskatchewan. A large number of agricultural societies do excellent work in providing opportunities for children to exhibit at the regular summer and fall fairs. These, however, are not included:—

Year	Number of Exhibitions reported.
1914	14
1915	42
1916	84
1917	129
1918	175
1919	202

During the year special efforts have been made to assist in developing community programmes. The library of lantern slides has been further extended. There are now available for loaning purposes some sixteen sets of seventy to seventy-five slides each, with sufficient descriptive matter to make it possible for any one to develop a good

lantern lecture. These sets have been sent out on request to a large number of points and are rendering excellent service as a means of entertainment and instruction in the rural communities.

A summary of the work carried on during 1919 shows that over 200 school exhibitions were held, 44 Rural Education Associations were formed, making a total of 118 in operation at the close of the year, over 200 public addresses were given, judges were provided for 175 exhibitions, 20 conventions and teachers' institutes were visited, 1,170 teachers in training were instructed in various phases of school agriculture, 2 short courses in agriculture were held at the summer school for teachers, 53 school districts were provided with trees and a large number of schools were visited, in addition to the assistance given through correspondence and by the distribution of bulletins and circulars prepared by the department.

In 1915 a branch of the Department of Education was organized under a director for the development of household science in the schools. The work developed until, in 1919, the staff consisted of five members in addition to the household science teacher at each of the two Normal schools. The activities connected therewith consist in assisting rural schools in establishing the noon lunch, instruction of teachers at Normal schools, assistance at school fairs, instruction at the summer school for teachers and special short course.

ALBERTA

The Department of Agriculture for Alberta has not developed club work to a very great extent. The work that is being done for Alberta boys and girls is accomplished by using the school organization for gardens and live-stock enterprises and giving directions in the schools with regard to these activities.

Under the direction of the three agricultural schools there were held 40 fairs, which included 440 schools and 6,500 pupils. In all classes there were approximately 25,000 exhibits. The agricultural schools, with funds provided under the Agricultural Instruction Act, supplied seeds, printing and judges.

The school fairs are based chiefly on the school garden work. In a number of the school fair districts in which the teachers of the agricultural schools carry on extension work, and also where the three agricultural representatives of the Department of Agriculture are operating, school clubs were organized for the rearing of poultry, calves, colts, and pigs. During the past year each of the agricultural representatives, in co-operation with the poultry branch of the Department of Agriculture, undertook the organization of a number of school poultry clubs. The work was entirely new to parents, pupils and teachers, but it has met with a most enthusiastic support from all. Eggs from pure strains were supplied for hatching, and the district agents as far as possible gave personal instruction and direction in the hatching, rearing and management of the young chicks. This was followed later in the season by instruction in the winter management of the flock. The popularity and success of the poultry clubs have been such that an extension of the work is being planned for the ensuing year.

BRITISH COLUMBIA

The introduction of nature study and school gardening is helping to stimulate the evolutionary movement in the direction of applying sound pedagogic principles to every-day practice. Year by year teachers are achieving better results in the correlation of nature study with other school subjects. School and home gardening is being used more intelligently, and pupils are coming to enjoy the nature study part of their work. The success of this branch as of other branches of study, rests with the teacher. Not only is improvement shown by the teachers in their work, but also a growing determination to secure the training necessary through the special summer courses in elementary agriculture provided with that object in view.

Seven district supervisors of agricultural instruction have already been provided in this province. Their duties are to give a course in agriculture, extending over two years to high school students and to assist the public school teachers in adjacent rural districts in carrying out a course of instruction in elementary agriculture and school and home gardening. They are also required to conduct extension or continuation classes in agriculture during the winter months for those who are no longer attending school. The supervisors are also available for advising with farmers in regard to agricultural problems. In the latter sphere they act in co-operation with the Department of Agriculture which department in consideration of such services, provides transportation facilities and office accommodation.

School fairs in British Columbia represent the co-operation of three agencies, the Department of Education, the agricultural societies and the school boards. They are usually held in conjunction with regular school fairs. In the districts served by district supervisors of agricultural instruction the best results have been attained. In addition to the school garden, school contests in crops and live stock are being encouraged with gratifying results.

NOVA SCOTIA

Ten travelling teachers in elementary agriculture now devote all their time to the work in Nova Scotia under the Director of Rural Science. The function of these teachers is really that of an organizer rather than a teacher. Rural science has developed through school gardening to all phases of home-making, including cooking, canning, sewing and community work. The travelling teachers are given a nine days' short course at Truro each year at which all the problems connected with their work are freely discussed.

Grants are no longer made to teachers on account of rural science work, but as an equivalent a larger bonus is allowed those who attend the summer school at Truro. The training school for teachers held annually at Truro has been made more practical and embraces play and sports as well as agricultural and home-making projects.

Nova Scotia reports that 5,000 school children made home gardens in 1919, a considerable increase over the year previous. The report states that at one school the teacher organized her garden into a small township, appointing a manager, road committee, weed inspector, thus teaching a very real lesson in civics.

The year saw a slight increase in the number of school fairs over the previous year. Last year 230 schools exhibited their produce; this year the number was increased to 250. Vegetables still continue to be the main feature of the children's exhibitions.

NEW BRUNSWICK

According to the course of instruction for the New Brunswick schools, nature study and agriculture is a prescribed subject for all schools. Only in schools, however, whose teachers are qualified by attendance at the Rural Science school, where experimental instruction and practical school gardening are carried on, are funds from the Agricultural Instruction Act used. In other schools formal abstract methods chiefly are employed.

The allotment to elementary agriculture is expended as follows:—

(1) Salary and expenses of Director of Elementary Agricultural Education and of his assistant.
(2) Teacher training—Expenses connected with the conduct of rural science schools and teachers' winter short courses.
(3) Grants to teachers and trustees for agricultural teaching subject to the regulations of the Board of Education.
(4) Expenses connected with school and home gardens and school fairs.
(5) Printing reports and bulletins, including a monthly leaflet devoted to the promotion of rural education.

In order to qualify teachers to give instruction in elementary agriculture, a rural science school is held each summer at Sussex, lasting for four weeks. This is supplemented by a teachers' winter short course. A full course requires two summer sessions and leads to a certificate. Teachers are paid their travelling expenses.

The Director of Elementary Agricultural Education is connected with the Department of Agriculture. His division conducts the extension work in agriculture, acting in co-operation with the Board of Education.

In most of the schools, home gardens and poultry projects are carried on, all leading to the school fair.

No grants have hitherto been made to high schools for agricultural instruction Nevertheless many of the high school teachers have taken the rural science school course, and co-operate with the teachers in the lower grades in this connection.

Boys' and girls' club work in New Brunswick has been very popular and the growth has been rapid. Through the Poultry Division of the Department of Agriculture thirty-six clubs were formed, with a total membership of 464. There was distributed, in all, to these clubs in 1919, 12,670 eggs and the estimated actual number of hens now owned by the members is 8,000. These are serving as a source of supply of hatching eggs for the province. Two years ago it was practically impossible to get any bred-to-lay strains in the province. The plan for 1920 is to organize these clubs as centres for securing quantities of hatching eggs for general distribution.

There were thirty poultry club fairs held in the province and birds to the number of 3,500 were exhibited. A number of the club members also exhibited at the larger provincial and county fairs in open competition and won a good share of the prize money in the utility classes at these exhibitions.

PRINCE EDWARD ISLAND

Nature study, including elementary agriculture, is a compulsory subject in the schools of Prince Edward Island. The work is associated with school or home gardens, pig and poultry clubs and school fairs, and is under the general supervision of a Director of Rural Science. A sum is allotted annually to these activities from the Agricultural Instruction grant and expended as follows:—

(1) Salary and expenses for the Director of Rural Science and assistant. Salaries of four additional school inspectors.
(2) Maintenance of the Rural Science Department of Prince of Wales College for the training of teachers and for junior extension work.
(3) Bonuses to teachers for teaching agriculture.

The Rural Science Department of Prince of Wales College was entirely equipped and is being maintained from the grant. It provides instruction in elementary agriculture for first and second year and Normal class students, and supplies the training in agriculture necessary to those who are to teach the subject in the schools. The department is in charge of a Director of Rural Science who supervises school agriculture generally, being assisted by the school inspection staff of eight inspectors, four of whom are paid from the grant. The junior extension work of the department includes boys' and girls' pig and poultry clubs and school fairs. Materials and supplies for work of this kind, including eggs and seeds, are distributed to the schools. A rural science circular is issued.

Grants and bonuses are paid to the teachers for elementary agriculture, the amount depending upon the standard of the work performed and the qualifications of the teacher.

School fairs as a part of the agricultural training in the rural schools were not organized in this province until 1916. As an experiment, four fairs were started.

These were so well received by the districts that the following year saw the number increased to fourteen. In 1919 the number had increased to forty. The Department of Agriculture, through the Rural Science Branch, directs the organization. The generous action of the Canadian Bankers' Association in giving $30 for calves and pigs when exhibited according to their regulations, was highly appreciated and has been of great benefit to the live-stock industry. The competition in dairy calves resulted in the finest exhibit of dairy calves and yearling heifers, all under eighteen months, shown at the Tryon School fair, ever brought together in the province.

The boys who take part in these competitions learn to feed, care for and exhibit and become intensely interested in live stock. The boys of to-day are the farmers of to-morrow, and live stock being the mainstay of agriculture it is felt that, in an agricultural country, every possible encouragement should be given to a form of education that will foster its development.

The efforts of the Rural Science Branch have resulted in the organization, on a fairly extensive scale, of poultry clubs among the pupils of the public schools. To facilitate the work, three large incubators were installed and day-old chicks were ordered far in excess of what the department was able to supply. The boys and girls exhibited their poultry at the school fairs and at the provincial poultry show held at Charlottetown.

FINANCIAL STATEMENTS

STATEMENTS, BY PROVINCES, OF THE EXPENDITURE OF THE GRANT OF 1919-20.

PROVINCE OF ONTARIO

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20

SUMMARY STATEMENT, April 1, 1919, to March 31, 1920

No.	Classification.	Balances April 1.	Grant.	Refunds.	Total Credits.	Expenditure.	Dr. Balance.	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1a	O. A. C.—Capital expenditure	137,259 65	40,000 00		177,259 65	95,008 48		82,251 17
1b	O. A. C.—Salaries and expenses, additions to staffs	793 34	15,000 00	300 00	16,093 34	15,174 00		919 34
2a	Kemptville Agricultural School—Capital	4,357 13	45,000 00	39,631 33	88,988 46	80,911 41		8,077 62
2b	" " " —Maintenance	36,692 00	15,000 00	11,465 68	63,157 68	24,625 58 39,631 33	1,099 23	
3	Agricultural representatives	1,213 69	126,000 00	1,870 25	129,083 94	126,870 82		2,213 12
4	Household Science Extension work	383 57	1,500 00		1,883 57	1,273 75		609 82
5	Co-operation and markets	229 66	12,000 00	653 74	12,883 40	9,869 23 1,300 00		1,714 17
6	Demonstrations in vegetable growing	455 31	12,000 00	691 63 531 92	13,686 25		7 39	
7	Stock and seed judging courses and institute work		2,000 00	500 00	2,500 00	693 81		1,806 19
8	Women's institute work	92 36	5,000 00	1,500 35	6,592 71	6,583 17		9 54
9	Short courses for fall fair, judges	847 12	5,000 00	25 10	5,872 22	4,440 30 1,413 92		
10	Lectures on horticulture	562 61	500 00		1,062 61	515 64		546 97
11	Demonstrations in growing and handling fruit	803 65	1,803 26		2,606 91	2,606 91		
12	" with vegetables in North Ontario	527 80	4,000 00	100 00 1,300 00	5,927 80	4,880 93		1,046 87
13	Horticultural Experiment Station	1,067 86	2,000 00		3,067 86	2,992 46		75 40
14	Demonstration work on soils	217 52	5,000 00	500 00 900 00	6,617 52	5,970 18		647 34
15	Demonstrations in bee-keeping	225 06	1,000 00		1,225 06	557 95		667 11
16	" in growing corn	196 91	3,500 00	100 00	3,796 91	3,094 04		702 87
17	Elementary agricultural education	8,478 80	40,000 00	46 27	48,525 07	40,214 63		8,310 44
	1918-19—Drainage work	2,669 38			2,669 38	2,669 14		24
	1918-19—Demonstrations in live stock and poultry	2,883 67			2,883 67			2,883 67
	1918-19—O. A. C.—Short courses (acre-profit competition)	2,214 53		66 25	2,280 78	960 55		1,320 23
		202,171 62	336,303 26	60,182 52	598,657 40	485,962 51	1,106 62	113,801 51

Province of Quebec

Grant of 1919-20

THE AGRICULTURAL INSTRUCTION ACT

SUMMARY STATEMENT, April 1, 1919, to March 31, 1920

No.	Classification.	Grant.	Expenditure.	Balance. Credit
1.	Schools of agriculture	$ 75,000 00	$ 56,002 59	$18,997 41
2.	School of Veterinary Science	5,000 00	5,000 00	—
3.	Animal husbandry	9,000 00	8,601 06	398 94
4.	Poultry	18,000 00	15,769,11	2,230 89
5.	Horticultural and entomological work	31,000 00	25,200 53	5,799 47
6.	Experimental and demonstration orchards	4,000 00	2,543 77	1,456 23
7.	Dairying	5,000 00	3,319 66	1,680 34
8.	Agricultural representatives	69,000 00	53,669 09	15,330 91
9.	Seed selection, clover-plots and demonstration	9,000 00	8,467 23	532 77
10.	Bee-keeping	7,000 00	5,993 12	1,006 88
11.	Drainage	6,000 00	5,058 90	941 10
12.	Maple industry	4,000 00	2,769 93	1,230 07
13.	Short courses and lectures	9,113 76	9,051 38	62 38
14.	Agriculture in academies	8,000 00	7,996 91	3 09
15.	Domestic science	10,000 00	4,401 94	5,598 06
16.	School children's exhibits	2,000 00	1,994 43	5 57
		$271,113 76	$215,839 65	$55,274 11

Macdonald College

STATEMENT of Receipts and Disbursements for year ending March 31, 1920

April 1, 1919—Debit balance forward		$1,998 66
Receipts—		
Agricultural Instruction Grant		25,000 00
		$23,001 34
Disbursements—		
Animal husbandry	$3,084 23	
Biology Department	1,117 95	
Cereal husbandry	2,269 18	
Chemistry Department	849 96	
Horticultural Department	367 77	
Household Science Department	4,671 64	
Poultry Department	4,115 94	
Veterinary science	2,113 05	
Rural schools	5,253 21	
Short courses	181 90	
General	223 58	
	24,248 41	
Debit balance March 31, 1920		$1,247 07

PROVINCE OF MANITOBA

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20

SUMMARY STATEMENT, April 1, 1919, to March 31, 1920

No.	Classification.	Balance April 1.	Grant.	Refunds.	Total Credits.	Expenditure.	Cr. Balance.
		$ cts	$ cts	$ cts.	$ cts.	$ cts.	$ cts
1	Agricultural representatives	3,753 46	20,113 11	By Trans. 1,000 00	24,866 57	24,798 16	68 41
2	Dairy work	3,865 11	3,000 00		6,865 11	6,862 96	2 15
3	Poultry work	5,251 42		To Trans. 1,000 00	4,251 42	3,865 65	385 77
4	Boys' and girls' club work	5,297 16	13,000 00	60 00	18,357 16	17,656 15	701 01
5	Short courses	136 77	20,000 00	35 00	20,171 77	19,912 96	258 81
6	Home economics	914 38	13,000 00		13,914 38	13,710 16	204 22
7	Soil analysis	1,302 80	1,000 00		2,302 80	295 75	2,007 05
8	Bee-keeping	908 97	1,000 00		1,908 97	391 15	1,517 82
9	Killarney Demonstration Farm	513 48	4,000 00	1,723 84	6,237 32	5,741 41	495 91
10	Contingent and miscellaneous	137 39	2,000 00		2,137 39	1,374 92	762 47
		22,080 94	77,113 11	1,818 84	101,012 89	94,609 27	6,403 62

PROVINCE OF SASKATCHEWAN

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20

SUMMARY STATEMENT, April 1, 1919, to March 31, 1920

No.	Classification.	Balance April 1.	Grant.	Refunds.	Total Credits.	Expenditure.	Dr. Balance.	Cr. Balance.
		$ cts.	$ cts.	$ cts	$ cts	$ cts.	$ cts.	$ cts.
	COLLEGE OF AGRICULTURE							
1	Staff Salaries, research, etc	5,714 83	21,476 16					
2	Women's work, etc	5,500 00	5,500 00		38,190 99	30,666 49		7,524 50
	INSTRUCTION AND DEMONSTRATION.							
3	Co-operative work, etc	Dr. 171 20	7,000 00	704 86	7,533 66	9,118 32	1,584 66	
4	Animal husbandry	5,471 05	3,000 00		8,471 05	3,965 79		4,505 26
5	Dairying	7,304 67	3,000 00		10,304 67	5,495 69		4,808 98
6	Field husbandry and weed control	2,963 01	5,000 60		7,963 01	7,536 76		426 25
7	Demonstration train	1,006 82	7,000 00	122 83	8,129 65	7,047 76		1,081 89
8	Agricultural representatives	11,874 82	1,476 16		13,350 98	2,445 32		10,905 66
9	Veterinary short courses	734 70	500 00		1,234 70	520 10		714 60
	ELEMENTARY AGRICULTURAL EDUCATION.							
10	Agricultural instruction in schools, etc	15,978 80	24,476 16	100 00	40,554 96	25,024 83		15,530 13
11	School fairs	3,957 07	2,500 00		6,457 07	24 95		6,432 12
12	Agricultural scholarships	800 00	800 00		1,600 00			1,600 00
		61,134 57	81,728 48	927 69	143,790 74	91,846 01	1,584 66	53,529 39

SESSIONAL PAPER No. 15a

Province of Alberta

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20.

Summary Statement, April 1, 1919, to March 31, 1920.

Classification.	Balances April 1.	Grant.	Total Credits.	Expenditure.	Dr. Balance.	Cr. Balance.
	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts
Schools of Agriculture—						
Maintenance	1,365 33	19,000 09	20,365 33	13,499 33		6,866 00
Equipment	2,623 83		2,623 83	1,712 86		910 97
Special work placing live stock on farms under the Live Stock Encouragement Act		3,700 00	3,700 00	4,698 26	998 26	
Women's work	89 54	4,300 00	4,589 54	3,735 86		853 68
Agricultural representatives	2,488 48	5,000 00	7,488 48	10,240 03	2,751 55	
Poultry and egg marketing		1,250 00	1,250 00	2,394 45	1,144 45	
Miscellaneous	1,385 09	32 81	1,417 90			1,417 90
Demonstration Farms	852 29		852 29	408 40		443 89
Publicity	1,517 66		1,517 66	17 90		1,499 76
Interest accrued			531 65			531 65
	10,322 22	33,482 81	44,336 68	36,707 09	4,894 26	12,523 85

Province of British Columbia

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20.

Summary Statement, July 1, 1919 to March 31, 1920.

Classification.	Balance, July 1	Grant.	Refunds.	Total Credits.	Expenditure.	Dr. Balance.	Cr. Balance
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Instructors and Representatives	5,983 78		100 00	100 00	12,882 69		
				5,983 78		18,766 47	
Field Crop and Dry Farming	2,056 55	3,000 00	1,723 19	6,779 74	4,608 09		2,171 65
Seed work	913 17	1,000 00	464 06	2,377 17	860 20		1,516 97
Field Crop Competition	2,285 00			2,285 00			2,285 00
Silo Demonstrations	1,275 16	2,000 00		3,275 16	2,115 09		1,160 07
Drainage Demonstrations	546 40			546 40			546 40
Horticultural Demonstrations and Competitions	1,961 92	2,000 00		3,961 92	687 87		3,274 05
Fruit Packing and Pruning Schools	1,997 00	2,000 00		3,997 00	238 80		3,758 20
Poultry	13 71	1,000 00	1,339 77	2,353 48	1,944 48		409 00
Dairying	914 91	8,000 00		8,914 91	3,263 15		5,651 76
Bee-Keeping	422 06	7,000 00	338 80	7,338 80	6,648 21		
					422 06		268 53
Boys' and Girls' Clubs	296 18	1,000 00		1,296 18	476 30		819 88
Agricultural Journal and Publications	311 61	6,000 00	106 92	6,418 53	7,567 26	1,148 73	
Pathological and Entomological work	77 28	4,000 00	0 68	4,077 96	3,643 25		434 71
Miscellaneous	1,058 49	199 06	750 00	2,007 55	756 52		1,251 03
Agricultural Instruction in Schools	7,031 64	20,000 00		27,031 64	12,917 16		14,114 48
University of British Columbia	6,864 70	12,000 00		18,894 70	4,252 74		14,551 96
	27,543 72	69,199 06	4,823 36	101,566 14	69,276 65	19,915 20	52,213 69

Credit Balance, March 31, 1920		$32,298 49
Less unpaid half of grant		34,599 53
Net Dr. balance		$ 2,301 04

PROVINCE OF NOVA SCOTIA

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20.

SUMMARY STATEMENT. April 1, 1919, to March 31, 1920.

No	Classification.	Balance April 1.	Grant.	Refunds.	Total Credits.	Expenditure.	Dr. Balance	Cr. Balance
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
A1	College, Interest and Sinking Fund, Science buildings	1,661 44	8,000 00		9,661 44	9,729 90	68 46	
2	College, salaries and maintenance		23,000 00		23,000 00	23,000 00		
B1	Agricultural representatives Dr.	1,378 43	12,000 00		10,621 57	10,399 19		222 38
2	Short courses	144 41	1,000 00		1,144 41	1,028 17		116 24
3	Dairying Dr.	696 25	5,618 54	*510 76	5,433 05	6,292 77	859 72	
4	Poultry	26 95	1,500 00		1,526 95	1,769 98	243 03	
5	Bee-keeping and apiary inspection	166 30	71 30		237 60	237 60		
6	Drainage and soil survey Dr.	26 00	1,600 00		1,574 00	2,288 83	714 83	
7	Soils and fertilizers	511 36	2,118 55		2,629 91	3,320 20	690 29	
8	Field crops	20 50	1,191 61		1,212 11	1,212 11		
9	Fruit growing	6 63	2,000 00		2,005 63	2,041 43	34 80	
10	Women's work	429 72	2,500 00		2,929 72	2,612 18		317 54
11	Entomological work	1,804 13	8,500 00		10,304 13	9,978 78		325 35
C1	Elementary Agricultural Education No. 1	2,887 36						
2	Elementary Agricultural Education No. 2	*21 34	12,000 00		15,708 70	13,782 74		1,925 96
	Contingencies	27 60	616 69		644 29	650 98	6 69	
		10,608 42	$1,716 69	510 76	$8,634 51	$8,344 86	2,617 82	2,907 47

* From N.B. and P.E.I. Provincial Governments' share of Dairy School expenses, previously paid from this fund.

SESSIONAL PAPER No. 15a

PROVINCE OF NEW BRUNSWICK

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20.

SUMMARY STATEMENT, April 1, 1919, to March 31, 1920.

No.	Classification.	Balances April 1.	Grant.	Re-funds.	Total Credits.	Expendi-ture.	Dr. Balance	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	Agricultural schools—Salaries, etc.	354 22	1,500 00	34 08	1,888 30	1,206 56		681 74
2	Agricultural representatives	1,600 27	12,000 00		13,600 27	13,406 01		194 26
3	Bee-keeping Dr.	157 42	2,400 00	17 15	2,259 73	2,447 94	188 21	
4	Soils and drainage Dr.	621 23	5,000 00	263 42	4,642 19	4,726 32	84 13	
5	Horticulture	262 11	5,200 00	3 20	5,465 31	5,034 14		431 17
6	Live stock Dr.	579 29	4,500 00	By Trans. 18 26 \ 500 00 /	4,438 97	4,124 50		314 47
7	Dairying Dr.	286 62	5,210 80	1,732 99	6,657 17	6,575 31		81 86
8	Poultry Dr.	958 80	3,800 00	1,050 01	3,891 21	5,588 12	1,696 91	
9	Entomology	206 05	900 00		1,106 05	600 00		506 05
10	Agricultural societies Dr.	40 71	2,800 00		2,759 29	2,918 63	159 34	
11	Women's Institutes Dr.	267 93	6,000 00	By Trans. 850 62	6,582 69	8,751 07	2,168 38	
12	Elementary Agricultural Education (including School Fairs), Dr.	870 96	14,800 00	357 22	14,286 26	11,619 94		2,666 32
	1918-19 Short courses	528 46			528 46	869 65	341 19	
	Fertilizers	1,151 54		To Trans. Item 11. 850 62 \ 9 75 /	310 67	310 67		
	Contingencies and miscellaneous	438 46		50 95	489 41	350 00		139 41
	Agricultural Schools—Equipment	500 00		To Trans. Item 6, 500 00				
		1,258 15	64,110 80	3,537 03	68,905 98	68,528 86	4,638 16	5,015 28

PROVINCE OF PRINCE EDWARD ISLAND

THE AGRICULTURAL INSTRUCTION ACT

Grant of 1919-20.

SUMMARY STATEMENT, April 1, 1919, to March 31, 1920.

Classification.	Balances April 1.	Grant.	Refunds.	Total Credits.	Expenditure.	Cr. Balance.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Agricultural Buildings—Equipment and Maintenance	38 38	1,725 00		1,763 38	1,270 60	492 78
Director and agricultural representatives	23 56	5,800 00		5,823 56	4,458 55	1,365 01
Short courses	53 31	300 00		353 31	98 97	254 34
Drainage and soils	15 49	1,300 00	457 00	1,772 49	1,540 90	231 59
Live stock and dairying	52 13	3,900 00	47 75	3,999 88	2,556 48	1,443 40
Poultry, bee-keeping, horticulture and co-operative marketing	20 26	1,700 00	110 11	1,830 37	1,185 41	644 96
Women's Institutes	414 17	3,510 00	30 00	3,954 17	3,080 27	873 90
Elementary agricultural education	30 16	11,500 00	244 68	11,774 84	10,380 36	1,394 48
Miscellaneous and contingencies	1,886 89	2,014 22	38 65	3,939 76	1,978 69	1,961 07
	2,534 35	31,749 22	928 19	35,211 76	26,550 23	8,661 53

SESSIONAL PAPER No. 15a

GRANT TO VETERINARY COLLEGES

The division of the grant of 1919-20 to veterinary colleges entitled to participate in the $20,000 allotted to such institutions under the Act was as follows:—

Ontario Veterinary College, 72 students	$14,117 65
School of Veterinary Science, Montreal, 30 students	5,882 35
	$20,000 00

Ontario Veterinary College

Statement of the Dominion grant April 1, 1919 to March 31, 1920.

Balance on hand, March 31, 1919			$ 112 64
Grant, 1915-16			14,869 53
			$14,982 17
Contingencies — postage, stationery, temporary assistance, etc.		$3,035 70	
Equipment, library and laboratory supplies, etc.		492 37	
Printing and advertising		706 28	
Services of lecturers, demonstrators, etc.—			
J. W. Adams	$ 100 00		
J. A. Allan	666 64		
H. W. Brown	300 00		
H. E. Batt	1,950 00		
W. G. Frisby	190 00		
W. J. R. Fowler	50 00		
T. H. Ferguson	150 00		
R. Gwatkin	799 98		
F. H. Kirkpatrick	60 00		
R. A. McIntosh	1,285 00		
H. D. Nelson	1,799 98		
W. L. Williams	100 00		
		7,452 28	
			11,686 63
Balance on hand March 31, 1920			$ 3,295 54

School of Veterinary Science, Montreal

Dominion grant, 1919-20		$5,882 35
Salaries of teaching staff	$5,829 90	
Incidentals	52 45	
	$5,882 35	$5,882 35

DEPARTMENT OF AGRICULTURE
CANADA

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

(F. TORRANCE, B.A., D.V.Sc.)

FOR THE

YEARS ENDING MARCH 31, 1919, AND MARCH 31, 1920

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1921

[No. 15b, 1921]

The Honourable S. F. TOLMIE,
Minister of Agriculture.

SIR,—I have the honour to submit my reports for the years ending March 31, 1919, and March 31, 1920.

I have the honour to be, sir,

Your obedient servant,

F. TORRANCE, B.A., D.V.Sc.
Veterinary Director General.

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

FOR THE YEAR ENDING MARCH 31, 1919

CONTAGIOUS DISEASES DIVISION

The health of Canada's live stock during the year has been highly satisfactory. None of the epizootic diseases which cause most anxiety to sanitary officials such as foot and mouth disease, cattle plague and contagious pleuro-pneumonia have been found within our borders. Glanders, hog cholera, and cattle mange have chiefly occupied our field force and it will be noted by the following statistics that they have been kept under control and progress accomplished.

GLANDERS

The greater part of Canada is now free from glanders and the number of cases discovered is less than half the figure of last year. Most of these cases occurred in the northern part of Saskatchewan and Manitoba among horses which had been used during the winter in hauling supplies, etc., to and from the mines in the Le Pas district. The infection appears to have now been stamped out. Its origin is however unknown.

GLANDERS STATISTICS BY PROVINCES APRIL 1, 1918, TO MARCH 31, 1919.

Province	Horses, mules and asses tested and found healthy	Horses killed	Valued at	Compensation paid	Clinical reactors	Electoral Districts in which glanders was detected	Remarks
Nova Scotia	1						
New Brunswick	109						
Quebec	560	2	290 00	193 33	1	2 Bagot.	Killed at first test.
Ontario	373						
Manitoba	1,130	16	3,180 00	2,120 00	4	16 Nelson.	Killed at first test.
Saskatchewan	2,799	50	8,465 00	5,643 33	11	31 Humboldt. 11 Last Mountain. 6 MacKenzie. 2 Saltcoats.	2 killed on inspection. 36 killed at first test. 12 killed at second test.
Alberta	955	15	2,325 00	1,550 00	5	15 Battle River.	Killed at first test.
British Columbia	354						
Yukon	20						
Total	6,301	83	14,260 00	9,506 66	21		

HOG CHOLERA

The campaign for increased production of hogs was highly successful and hog raisers increased their herds to a great extent. It thus happened that when our attention was called to an outbreak of hog cholera, we would frequently find a very large number of hogs involved. Losses from the disease in Canada are therefore somewhat heavier than last year, but in every case outbreaks were promptly controlled, and by the use of serum the losses were reduced to a minimum. The value of the system of licensing persons who collect garbage and feed it to hogs is again demonstrating its usefulness not only in preventing infection through uncooked and virulent material, but by keeping the inspectors of the branch in close touch with the persons in this line of business. Early information of any suspicious sickness among hogs is thus obtained and measures to prevent the spread of infection can be taken. It may be added that the sanitary conditions of these premises have greatly improved through the work of the inspectors.

HOG CHOLERA STATISTICS BY PROVINCES APRIL 1, 1918, TO MARCH 31, 1919.

Province	No. of outbreaks	No. of hogs involved	No. of hogs slaughtered	Valued at	Compensation paid	Premises quarantined on suspicion	No. of hogs involved	No. of hogs slaughtered for examination	Value
				$ cts.	$ cts.				$ cts.
Nova Scotia	2	1,521	314	4,567 00	3,044 65	1	165	.... ..	
New Brunswick	1	3	3	45 00	30 00	1	100	.. ..	
Quebec	5	309	173	2,949 00	1,741 98	20	43	. .	
Ontario	35	1,600	848	16,295 00	9,171 73	193	2,482	51	916 00
Manitoba	6	1,690	286	5,137 00	3,117 95	12	722	3	29 00
Saskatchewan	1	12	12	156 00	.....	8	337	.... .	....
Alberta	2	4,224	527	9,354 00	6,236 43	7	307	9	116 00
Total	52	9,359	2,163	38,503 00	23,342 74	242	4,156	63	1,061 00

HOG CHOLERA OUTBREAKS BY PROVINCES

Province	Electoral District	No. of outbreaks	Hogs destroyed
Nova Scotia	Halifax	2	314
New Brunswick	St. John and Albert	1	3
Quebec	Chambly and Verchères	2	55
	Vaudreuil-Soulanges	1	1
	Laval-Two Mountains	1	112
	Québec	1	5
Ontario	Algoma West	2	20
	Elgin East	1	15
	Elgin West	1	30
	Essex North	4	61
	Essex South	3	87
	Haldimand	1	2
	Kenora	1	27
	Kent	1	78
	Lambton East	2	15
	Leeds	2	232
	Lincoln	1	8
	Middlesex	1	1
	Nipissing	1	37
	Peel	2	12
	Simcoe North	1	38
	Wellington South	1	15
	York West	5	115
	York South	3	42
	York East	2	13
Manitoba	Dauphin	1	56
	Winnipeg	1	87
	Provencher	1	43
	Lisgar	1	25
	Winnipeg Centre	1	18
	Selkirk	1	57
Saskatchewan	Moosejaw	1	12
Alberta	Calgary	1	513
	Macleod	1	14
Total		52	2,163

DOURINE

This disease which at one time seriously threatened the horse-breeding industry of Western Canada may now be considered as finally stamped out. No clinical cases have been observed for two years. The animals shown as slaughtered are a few which have failed to make a satisfactory showing when subjected to the complement fixation test of their blood. As a precaution, however, the stallions of the dourine area will be tested before the breeding season commences.

A total of five animals, valued at $392, were slaughtered as being affected with the disease, at a cost of $261.33, distributed as follows:—

District	Province	Suspected and Quarantined	Slaughtered
Prince Albert	Saskatchewan	2	
Saskatoon	"	2	
Battle Creek	"	1	
Bow River	Alberta	8	
East Calgary	"	3	
Lethbridge	"	1	1
Macleod	"		4
Red Deer	"	3	
		20	5

HORSE MANGE

Province	Outbreaks	Animals Affected	Animals Quarantined
Ontario	1	2	7
Alberta	1	3	20

A total of 4,817 horses and 40 mules were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

SCABIES

Mange of cattle has and is occasioning much concern to us and is causing no small loss and annoyance to the stockmen of the mange area. The branch is finding it a difficult task to stamp out the disease, chiefly owing to the fact that the area affected is partly open range country in which cattle roam widely and are not always kept from mixing with other herds. But this fact, although aiding in the spread of the disease, and making it difficult to carry out effective dipping, is not the only trouble. The stockmen have not given the branch the willing assistance and co-operation that is essential for successfully dealing with the disease. There are many who have done all that could be expected of them, but there are also a large number who look upon the mange regulations as a needless interference with the traffic in cattle and evade them if possible.

In spite of these difficulties some progress has been made in controlling it and a large portion of the area has been cleaned up and will shortly be released from the obnoxious blanket quarantine. From time to time as circumstances permit the boundaries of the area will be shortened until they can be entirely removed.

The severe drought affecting the southern part of the mange area reduced the available forage to such an extent that it became necessary to make a decision between allowing some of the cattle to starve or to permit their removal to the northern part of the province where feed could be obtained. Owing to the lateness of the season dipping could not be carried out as effectually as was desirable, and in consequence mange was introduced in a few localities previously clean. The herds affected have been placed under quarantine and will be dipped as soon as the weather permits. It is to be hoped that this limited infection of the northern part of the province will soon be eradicated.

CATTLE MANGE

Dominion

Province	Outbreaks	Animals Affected	Animals Quarantined
Saskatchewan	12	81	15,473
Alberta	171	2,117	84,763

One hundred and twenty-four thousand eight hundred and thirty-two cattle were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan, and 263,867 cattle were inspected in Winnipeg on arrival from points west thereof.

SHEEP SCAB

In Manitoba, six animals on one man's premises were found to be infected with sheep scab, involving the control of twenty-eight animals on this one premises in the district of Selkirk.

RABIES

In Ontario, fifteen premises were quarantined, distributed as follows:—

District	Premises Quarantined
Durham	3
Elgin, W. R.	1
Lincoln	1
Norfolk	1
Northumberland	6
Peel	-
Toronto	2
	15

No fatalities in human beings were reported.

ANTHRAX

The following outbreaks were reported and dealt with during the year:—

Province	Outbreaks	Animals Quarantined
Quebec	2	53
Ontario	2	147

The death of one human being was reported as due to anthrax.

TUBERCULOSIS

In municipal testing the work is slowly extending, but not to the extent that might be expected. Municipalities do not appear to realize the advantage of the Government's offer to test dairy herds free of charge and to pay compensation for cattle slaughtered as diseased. Many cities appear to think that pasteurizing the milk affords every protection. Other cities do not even take this precaution and the citizens are left to take their chances. The burden of this carelessness does not fall upon those who deserve it, but upon the poor defenceless children, many of whom are doomed to early graves or to lives of crippled misery from tubercular infection carried by the milk of diseased cows. Our first test of certain dairies sometimes reveals appalling conditions. In one dairy our inspectors found ten cows all of which reacted to the tuberculin test. When these were slaughtered, all were found diseased, some extensively. Among them were cows whose milk was loaded with tubercle bacilli. This dairy was distributing raw milk daily in the city. How many children were exposed to disease in this way is unknown, or how many contracted the disease, but there is no reason to expect that all escaped. The city in question now has a safe milk supply, as all raw milk offered for sale is derived from tuberculin tested cows.

It will be noticed that the percentage of reactors found in Saskatoon is the lowest in the list. This city was the first in Canada to adopt the Federal Regulations. In other places the percentage varies considerably, reaching 7·03 per cent in Battleford, which is one of the latest to join the list.

Experience indicates that in dairy testing it need hardly be expected to reach a point where no reactors are found. This might be possible if a dairy herd could be maintained without adding to it constantly fresh cows from other herds. The dairyman must maintain a steady supply of milk to satisfy his customers, and can only do so by replacing his cows that go dry by others that have just freshened. These fresh cows have to be tested before they are added to the herd, and in some cases react to the test and in this way keep up the percentage for an owner who has a clean herd.

ACCREDITED HERD SYSTEM

This system was adopted in the United States by the Bureau of Animal Industry in 1917 and already has made great progress. It is a plan for assisting the owner of a pure-bred herd to get rid of tuberculosis if it is present and when he has done so to give him the advantage of having his herd placed on the list of tuberculosis free herds, or "accredited." Efforts have been made to interest our breeders in this work by addresses and articles in the press. It is most important that the system should be adopted in Canada without delay, as otherwise our pure-bred cattle are in danger of losing the American market.

TUBERCULOSIS MUNICIPAL TESTING, APRIL 1, 1918 TO MARCH 31, 1919

Town	Cattle Tested. No. of test							Total cattle tested	Reactors	Percentage of reactors	Value	Compensation paid	Remarks
	1	2	3	4	5	6	7						
											$ cts.	$ cts.	
North Battleford, Sask.	260	188	95	35	14	2	3	597	42	7·03	3,178 00	2,118 66	
Saskatoon, Sask.	885	469	357	271	201	53	9	2,245	33	1·47	2,795 00	1,863 28	5 of the 33 reactors not yet slaughtered nor paid for.
Regina, Sask.	486	559	306	91	45	6	.....	1,493	32	2·14	2,570 00	1,713 33	1 reactor not yet slaughtered nor paid for.
Virden, Man.	148	41	.....	.....	.....	.....	.....	189	9	4·76	985 00	656 63	
Ottawa, Ont.	749	526	132	69	47	32	.....	1,555	47	3·02	5,775 00	3,849 93	6 reactors not yet slaughtered nor paid for. 30 reactors held from previous year paid for.
Total	2,528	1,783	890	466	307	93	12	6,079	163	2·68	15,303 00	10,201 83	

NOTE.—It must be remembered that most of the herds comprised in this table have been under test for one or more years and all reactors removed. Hence the comparatively low percentage of disease shown.

TUBERCULIN TESTING IMPORT, EXPORT AND GENERAL, APRIL 1, 1918, TO MARCH 31, 1919

Heading	Number tested	Reactors	Suspicious	Healthy	Percentage of reactors
Import	847	14	3	830	1·65
Export	1,252	33	2	1,217	2·63
Supervised herds and for shipment to various provinces	2,872	119	14	2,739	4·14
General testing by private practitioners with Departmental tuberculin	2,814	237	42	2,535	8·42
Total	7,785	403	61	7,321	5·20

IMPORT INSPECTIONS FROM UNITED STATES AND NEWFOUNDLAND.

Port	Horses	Mules	Cattle	Sheep	Swine	Goats	
Halifax, N.S.	.....	97	.....	.....	.....	.....	
Sydney, N.S.	*4	.....	.....	.....	.....	.....	*Includes 4 ponies.
St. Stephen, N.B.	39	2	.....	.....	.....	.....	
McAdam Jct., N.B.	*73	.....	4	39	.....	.....	*Includes 3 shetland ponies.
Debec Jct., N.B.	16	.....	1	.....	.....	.....	
Woodstock, N.B.	10	.....	1	.....	.....	.....	
Centreville, N.B.	2	.....	2	.....	.....	.....	2 calves.
Aroostook Jct., N.B.	37	.....	13	.....	.....	.....	
Grand Falls, N.B.	5	.....	2	.....	.....	.....	
St. Leonards, N.B.	8	.....	1	.....	.....	.....	
Edmundston, N.B.	10	.....	1	.....	.....	.....	
Florenceville, N.B.	4	.....	.....	.....	.....	.....	
Comins Mills, Que.	21	.....	12	.....	.....	.....	
Lake Megantic, Que.	28	.....	.....	.....	.....	.....	
Beauceville, Que.	402	.....	.....	.....	.....	.....	
Coaticook, Que.	3	.....	.....	.....	.....	.....	
Beebe Jct., Que.	15	.....	41	.....	.....	.....	
Sherbrooke, Que.	17	.....	1	.....	7	.....	
Highwater, Que.	6	.....	9	.....	.....	.....	
Abercorn, Que.	4	.....	4	.....	.....	.....	
St. Armand, Que.	17	.....	3	.....	.....	.....	
Lacolle Jct., Que.	*118	7	11	12	7	.....	*Includes 3 ponies.
Noyan Jct., Que.	10	.....	7	.....	.....	.....	
St. Johns, Que.	1	.....	.....	.....	.....	.....	
Athelstan, Que.	536	49	37	.....	.....	.....	
Dundee, Que.	47	.....	47	.....	.....	.....	
St. Agnes de Dundee, Que.	2	.....	.....	.....	.....	.....	
Trout River, Que.	2	.....	4	.....	.....	.....	
Cornwall, Ont.	16	.....	2	.....	.....	.....	
Prescott, Ont.	35	.....	38	.....	.....	.....	
Morrisburg, Ont.	12	2	3	.....	.....	.....	
Brockville, Ont.	14	.....	2	.....	.....	.....	
Kingston, Ont.	7	*1	.....	.....	.....	.....	*Includes 1 jackass.
Toronto, Ont.	1	.....	.....	.....	.....	.....	
Niagara Falls, Ont.	*584	312	39	42	.....	3	*Includes 1 pony.
Windsor, Ont.	*180	**4	58	58	15	8	*Includes 5 ponies, **Includes 1 ass.
Sarnia, Ont.	664	.....	97	79	3	1	*Includes 1 pony.
Sault Ste. Marie, Ont.	17	2	*13	.....	2	.....	*Includes 1 ox.
Port Arthur, Ont.	7	.....	.....	.....	.....	.....	
Rainy River, Ont.	20	2	10	.....	.....	.....	
Fort Frances, Ont.	*106	1	42	4	5	6	*Includes 2 ponies.
Bridgeburg, Ont.	115	4	32	83	13	4	
Emerson, Man.	2,181	88	785	46	7	10	
Gretna, Ont.	161	6	89	3	.....	.....	
Snowflake, Ont.	134	4	83	.....	.....	.....	
Bannerman, Ont.	289	1	65	2	.....	.....	
Sprague, Ont.	10	.....	.....	.....	.....	.....	

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IMPORT INSPECTIONS FROM UNITED STATES AND NEWFOUNDLAND—*Concluded*

Port	Horses	Mules	Cattle	Sheep	Swine	Goats	
North Portal, Sask.	2,289	103	2,742	68	30	9	Also 1 camel, 1 elephant.
Northgate, Sask.	384	4	74	.....	.....	6	
Big Muddy, Sask.	415	2	151	.....	.....	.....	
Willow Creek, Sask.	31	.....	1,174	.....	.....	.....	
West Poplar River, Sask.	532	*10	416	1,749	.....	.....	*Includes 1 ass.
Pinhorn, Alta.	39	.....	5	.....	.....	.....	
Coutts, Sask.	1,558	*74	2,083	8,631	22	378	Also 2 deer. *Includes 3 donkeys.
Twin Lakes, Alta.	62	.....	57	.....	.....	3	
Newgate, B.C.	37	.....	24	.....	.....	.....	
Kingsgate, B.C.	881	49	622	113	.....	10	
Rossland, B.C.	1	.....	.....	.....	.....	.....	
Grand Forks, B.C.	16	.....	131	70	.....	.....	
Midway, B.C.	44	.....	5	.....	15	.....	
Myncaster, B.C.	8	.....	14	.....	.....	.....	
Bridesville, B.C.	50	.....	27	1	20	.....	
Keremeos, B.C.	50	.....	243	.....	2	1	
Osoyoos, B.C.	43	2	5	251	.....	.....	
Huntingdon, B.C.	100	8	181	.....	.....	225	
New Westminster, B.C.	.....	.....	17	365	.....	.....	
White Rock, B.C.	92	*7	295	68	4	147	*Includes 4 asses.
Vancouver, B.C.	122	63	.....	2	3	2	
Victoria, B.C.	25	*17	1	.....	.....	41	*Includes 1 donkey.
Cascades, B.C.	6	.....	1	.....	.....	.....	
White Horse, Yukon.	32	.....	306	120	70	3	
Forty Mile, Yukon.	122	3	.....	.....	.....	.....	
Total.	12,949	924	10,133	11,806	225	857	

IMPORT INSPECTIONS FROM EUROPE AND ELSEWHERE TRAN UNITED STATES AND NEWFOUNDLAND

Port	Horses	Cattle	Sheep	Swine
St. John, N.B.	.....	.....	47	.....
Quebec, Que.	3	447	916	1
Montreal, Que.	13	.....	.....	.....
Niagara Falls, Ont.	.....	.....	11	.....
Bridgeburg, Ont.	.....	2	1	.....
	16	449	975	1

IMPORT TESTING

Four thousand and fifty-four horses were tested on arrival from United States and allowed to proceed to their destination.

Entered at	Number	Entered at	Number
Aroostook Jct., N.B.	37	Rainy River, Ont.	22
Centreville, N.B.	2	Sarnia, Ont.	34
Debec Jct., N.B.	7	Sault Ste. Marie, Ont.	10
Edmundston, N.B.	10	Windsor, Ont.	72
Florenceville, N.B.	4	Bannerman, Man.	93
Grand Falls, N.B.	5	Emerson, Man.	473
McAdam Jct., N.B.	28	Gretna, Man.	75
St. Leonards, N.B.	8	Sprague, Man.	10
St. Stephen, N.B.	3	Snowflake, Man.	120
Woodstock, N.B.	5	Big Muddy, Sask.	95
Athelstan, Que.	7	Northgate, Sask.	254
Abercorn, Que.	2	North Portal, Sask.	548
Beauceville, Que.	402	West Poplar, Sask.	412
Beebe Jct, Que.	10	Willow Creek, Sask.	31
Coaticook, Que.	3	Pinhorn, Alta.	40
Comins Mills, Que.	18	Coutts, Alta.	640
Dundee, Que.	8	Twin Lakes, Alta.	62
Highwater, Que.	4	Vancouver, B.C.	4
Lacolle Jct, Que.	2	White Rock, B.C.	9
Lake Megantic, Que.	28	Huntingdon, B.C.	36
Noyan Jct, Que.	7	Bridesville, B.C.	32
Sherbrooke, Que.	5	Myncaster, B.C.	8
St. Agnes de Dundee, Que.	2	Keremeos, B.C.	23
St. Armand, Que.	9	Osoyoos, B.C.	45
St. Johns, Que.	1	Rossland, B.C.	1
Trout River, Que.	2	Midway, B.C.	44
Bridgeburg, Ont.	9	Grand Forks, B.C.	16
Cornwall, Ont.	1	Cascades, B.C.	6
Fort Frances, Ont.	34	Kingsgate, B.C.	88
Kingston, Ont.	8	Newgate, B.C.	37
Morrisburg, Ont.	7		
Niagara Falls, Ont.	20	Total	4,054
Port Arthur, Ont.	7		
Prescott, Ont.	9		

PURE-BRED IMPORTS

HORSES

Breed—	Great Britain	United States	Total
Belgian	..	73	73
Clydesdale	13	8	21
French draft	..	2	2
Hackney	..	2	2
Percheron	3	245	248
Shetland	..	6	6
Shire	..	9	9
Standard	..	41	41
Thoroughbred	..	11	11
	16	397	413

CATTLE

Breed—	Great Britain	United States	Total
Aberdeen Angus	2	27	29
Ayrshire	49	4	53
Brown Swiss	..	4	4
Guernsey	47	13	60
Hereford	..	49	49
Holstein	..	22	22
Jersey	35	62	97
Polled Angus	1	..	1
Red Polled	..	3	3
Shorthorn	315	35	350
	449	219	668

PURE-BRED IMPORTS—*Concluded.*

SHEEP

Breed—	Great Britain	United States	Total
Cheviot	..	14	14
Cotswold	6	..	6
Dorset	..	16	16
Hampshire	297	..	297
Leicester	16	..	16
Lincoln	41	..	41
Oxford	11	..	11
Persian	..	2	2
Rambouillet	..	6	6
Shropshire	570	9	579
Southdown	34	..	34
	975	47	1,022

SWINE.

Breed—	Great Britain	United States	Total
Berkshire	..	9	9
Ohio Improved Chester	..	13	13
Poland China	..	2	2
	..	24	24

GOATS.

Breed—	Great Britain	United States	Total
Toggenburg	..	6	6
Anglo Nubian	..	1	1
Saanen	..	1	1
	..	8	8

DISEASED IMPORTS

Port	No. of animals in infected shipment	No. of shipments	No. of animals infected	Origin	Action
Morrisburg, Ont.	cows 1	1	1	United States	Returned.
West Poplar, Sask.	" 26	1	2	"	2 returned.
" "	horses 14	2	3	"	All returned.
Grand Froks, B.C.	cow 1	1	1	"	Returned.
Huntingdon, B.C.	cows 12	1	1	"	1 returned.
Osoyoos, B.C.	horses 4	1	1	"	All returned.
White Rock, B.C.	cows 2	1	1	"	1 returned.
	60	8	10		
	18 horses 42 cattle				

ANIMALS INSPECTED FOR EXPORT.

Port	Horses	Cattle	Sheep	Swine
Charlottetown to Newfoundland	..	31	..	43
Halifax to Bermuda	26	20	..	—
Halifax to St. Pierre	2	45	28	—
Halifax to Port of Spain, W.I.	..	..	..	9
Sydney to Newfoundland	287	2,652	765	576
St. John to Bermuda	13	12	..	..
St. John to United States	2	1	2	2
Toronto to United States	..	45,921	3,104	230
Niagara Falls to United States	2	..	..	..
Sarnia to United States	..	1	..	60
North Portal to United States	..	875	..	..
Edmonton to United States	..	87	..	..
Bridesville to United States	..	2	..	..
Huntingdon to United States	..	17	..	..
New Westminster to United States	..	2	..	..
Total	332	49,666	3,899	920

PATHOLOGICAL DIVISION

The Biological Laboratory at Ottawa has satisfactorily supplied all the tuberculin and mallein required by inspectors of this branch, and in addition has furnished large quantities of blackleg vaccine for distribution to farmers. Other biological products manufactured on a smaller scale are anthrax vaccine, contagious abortion vaccine, influenza vaccine, etc. Valuable service is also rendered in the laboratory in the diagnosis of diseases from the microscopical examination of specimens of diseased tissues, tumours, etc., sent in by our inspectors in the field or in meat inspetion and also by practitioners.

Research work is carried on as far as our circumstances permit. The absence on military duty of two of the most experienced members of our staff has seriously limited our work in this direction. Another drawback is the limited space available for this work at the Biological Laboratory and the hesitation one feels in conducting experiments on contagious diseases in premises so closely situated to a valuable herd on the Experimental Farm. It is to be hoped that some additional facilities may be provided so that the very necessary work of research can be carried on.

The branch laboratories at Lethbridge and Agassiz have done good work in their respective fields.

At Lethbridge a very large number of tests of blood have been made for the control of dourine. This is work calling for the very highest degree of skill and experience, and the success of the Health of Animals Branch in eradicating dourine is almost entirely due to the reliable tests made at the laboratory.

The Agassiz Laboratory has done good work in investigating many obscure problems relating to the health of livestock in British Columbia. The poisonous nature of common bracken has been demonstrated by experiment and a bulletin on the subject published. Bracken or fern in the hay has caused many deaths among farm horses.

MEAT AND CANNED FOODS DIVISION

MEAT AND MEAT FOOD PRODUCTS

The work of this division has been unusually heavy during the past year as the slaughterings of cattle, sheep and swine have shown an increase of nearly 48 per cent.

This work was carried on by a depleted staff and the thoroughness with which they performed their work is borne out by the statement of the British authorities who placed on record their high opinion of the work of the Canadian meat inspection staff during the year past.

The character of this work was further attested by the small number of complaints that were received, in fact the complaints were fewer in number than those which were expected as a matter of course in normal times.

During the year the usual examinations were held and twenty-two candidates who presented themselves were successful in obtaining the required number of marks.

An amendment to the Act has been secured by which this division has been given control of imported food stuffs. This amendment completes in a measure the intentions of the Act, namely: that the consumers of meat and meat food products in Canada may have some assurance as to the wholesomeness of the raw materials used, the sanitary conditions under which they are prepared and the honesty of the labels placed thereon. In the past this was assured in so far as products manufactured in Canada were concerned, but no control was exercised over imports and great quantities of food were brought into Canada, of which the soundness, sanitary handling and labelling were open to serious question. New regulations will be drafted governing this trade and the work of this division will be developed in order properly to supervise and control imported foods.

Prosecutions were instituted for infractions of the law and in every case a conviction was secured.

During the year one of the largest establishments in Canada, the Harris Abattoir, Limited, Toronto, was very seriously damaged by fire. The co-operation of our staff at the time of this fire assisted in the salvaging of thousands of pounds of good food which would otherwise have been destroyed. Immediately afterwards the plant was rebuilt and enlarged and today it is looked upon as one of the more modern of the packing establishments operating in Canada.

A number of new establishments were placed under the operation of the Act during the past twelve months, but inspection was refused to others where the construction and sanitary equipment were not up to the standard required.

The improvements made in the meat packing establishments in the course of the past year were greater perhaps than at any time since inspection was inaugurated. Tens of thousands of dollars were expended by the managements in bringing their establishments up to the modern requirements with the result that today there are operating in the Dominion of Canada meat packing plants that will compare favourably (except perhaps in size) with those that are to be found in any other country in the world.

The spirit of co-operation between the managements and our inspectors, which has been so gratifying in the past, continues to exist.

Following are the statistics which show in a complete form the work carried on during the year. These statistics are commented on in the order in which they appear in this report.

For the year ending March 31, 1919, the following statistics are submitted:—

A. Total slaughter:—

Cattle	887,773—	Increase over 1917-18,	148,666	head, or	20·12%.
Sheep.....	399,961—	" "	61,064	" "	18·13%.
Swine.....2,333,354—		" "	203,672	" "	9·56%.

B. The provinces show increases or decreases as follows:—

	Cattle		Sheep		Swine	
	Head	Percent	Head	Percent	Head	Percent
Ontario	+31,886	9·52	+34,612	21·75	− 2,697	0·22
Quebec	+55,057	31·25	− 3,570	3·84	+ 43,181	14·95
Manitoba	+19,033	18·05	+18,186	127·50	+116,546	58·88
Saskatchewan	+16,233	92·50	+ 1,215	27·18	+ 42,829	112·10
Alberta	+23,675	29·81	+13,436	52·19	− 7,371	2·47
British Columbia	+ 2,247	10·25	− 93	0·89	+ 4,505	13·27
New Brunswick	+ 545	158·43	− 59	0·52	.....	.....
Nova Scotia	.....	.....	.....	.....	.....	.....
Prince Edward Island	+ 12	0·37	− 2,663	14·42	+ 6,679	39·52

C. The percentage of slaughter for each province to the total for Canada:—

	Cattle Per cent	Sheep Per cent	Swine Per cent
Ontario	41.33	48.68	53.66
Quebec	26.04	22.46	14.23
Manitoba	14.02	8.15	13.48
Saskatchewan	3.81	1.43	3.47
Alberta	11.61	9.85	12.50
British Columbia	2.72	2.61	1.65
New Brunswick	.10	2.85	....
Nova Scotia	....	....	....
Prince Edward Island	.37	6.97	1.01

Slaughterings (Table B)

Cattle.—All provinces show an increase in killing.

Sheep.—Ontario and the three Prairie Provinces show a large increase, while Quebec, British Columbia and the Maritime Provinces show decreases. It is very satisfactory to have an increase in sheep killing. Canada could and should produce all the mutton consumed without importing.

Swine.—With the exception of Ontario and Alberta, where there are slight decreases, we have an increase in swine killing, but comparing same with last year's kill, it is not up to expectations and, considering the high prices paid, it should have been greater.

Provincial Percentage to Total Kill (Table C)

Ontario still holds the premier position as to having the largest killing of the provinces, but lost several points in cattle and swine this year, showing 41·33 per cent against 45·33 in cattle, and 53·66 per cent against 58·94 in swine, last year. Sheep increased about 1½ per cent over last year.

In Quebec we find a slight increase in cattle of 2¾ per cent, sheep a decrease of 5¼ per cent, and in swine a slight increase of less than 1 per cent.

The three Prairie Provinces show an increase in all killings, with the exception of Manitoba in cattle and Alberta in swine, both of which show a slight decrease.

British Columbia is about the same as last year.

The Maritime Provinces show little change from last year, although the tendency in Prince Edward Island is an increase owing to improved facilities and additional killing plants.

During the course of re-inspection the following meats were condemned:—

	Cattle Lb.	Sheep Lb.	Swine Lb.	Poultry Lb.
Bruised	10,595	....	43,859	....
Decomposed	149,161	1,644	54,410	....
Dirty	390,113	1,032	163,215	....
Sour	177,745	4,026	142,960	....
Various	.....	2,213	335	2,257
Total	727,614	8,915	404,779	2,257

Total amount condemned on reinspection 1,143,565 pounds.

Customs statistics show that Canada imported and exported the following during the year:—

		Imports	Exports
Cattle	(live)	7,242	311,496
Sheep	"	12,440	120,131
Swine	"	3,078	32,053
Beef	(lb.)	1,891,713	127,113,294
Mutton	"	5,928,089	1,933,808
Pork	"	15,899,237	160,032,547
Lard	"	644,969	2,640,658
Canned meats		531,403	14,140,717
Miscellaneous meats		1,229,527	6,183,554

Carcass Condemnations

Cattle:—The percentage of animals condemned to total kill is about the same as last year, cattle being 1·07 both years; sheep, 0·12 against 0·13 last year; swine, 0·23 against 0·27 last year.

In cattle the proportion condemned for tuberculosis is somewhat lower than last year, 53·85 per cent against 58·42, while those for bruises, cripples, and imperfect bleeding are higher, 4·68 per cent against 3·22 per cent.

Those condemned for emaciation are higher this year, 3·63 per cent against 1·80 per cent.

Cysticercus bovis are lower this year than last, 1·57 per cent against 2·64 per cent.

Emaciation claims a percentage of 21·81 against 22·41 previous year.

The proportion of calves killed to total slaughter is 18·41 per cent; last year, 14·09 per cent.

Sheep:—There is nothing calling for comment in sheep condemnation.

Swine:—Tuberculosis again claims the highest condemnation in swine, 69·78 per cent against 75·25 per cent, due partly to more dairy by-products being pasteurized and also to a larger percentage of western hogs being killed where the disease is not so heavy as in the east.

Cysticercus cellulosae accounted for 5·97 per cent against 5·81 per cent last year.

Hog cholera is much higher this year, 204 carcasses. or 3·76 per cent, against only 6 carcasses last year.

In comparison with last year our exports of live cattle are much higher, 311,496 against 191,356 last year, the number of head one-year-old or less being much less, they representing only 12·80 per cent of total exported, against 23·68 last year.

The number of sheep exported was 120,131, against 134,705. The lambs represent a percentage of 78·27 per cent, against 84·65 per cent last year.

Our exports of meats and lard were much higher than last year, while all meat and lard imports are considerably less than last year.

The following is a comparison between the hog killing of Canada, Denmark, and Ireland for the calendar years 1912-1918:—

	Canada	Denmark	Ireland
1912	1,650,966	2,084,786	1,416,490
1913	1,564,246	2,215,850	1,181,285
1914	2,255,479	2,654,041	1,266,620
1915	2,616,461	1,960,965	1,376,063
1916	2,313,389	1,534,011	1,277,900
1917	2,086,009	*1,000,000	967,475
1918	2,259,736	*638,000	730,177

*Estimated.

The following summary shows the result of post-mortem inspections of cattle, sheep, and swine from April 1, 1918, to March 31, 1919:—

Cattle marked "Canada Approved"	878,198
Carcases of cattle "Condemned"	9,575
Percentage of cattle "Condemned"	1.07
Portions of cattle "Condemned"	264,578
Sheep marked "Canada Approved"	399,479
Carcases of sheep "Condemned"	482
Percentage of sheep "Condemned"	0.12
Portions of sheep "Condemned"	108,478
Swine marked "Canada Approved"	2,327,929
Carcases of swine "Condemned"	5,425
Percentage of swine "Condemned"	0.23
Portions of swine "Condemned"	1,000,681
Total number of carcases "Passed"	3,605,606
Total number of carcases "Condemned"	15,482
Percentage of carcases "Condemned"	0.43
Total number of portions "Condemned"	1,373,737

In addition to the animals slaughtered at inspected establishments, the following amounts of dressed and cured meats and lard, etc., were received during the fiscal year from foreign countries:—

Beef	(lb.)	1,942,239
Mutton	"	3,328,857
Pork	"	11,862,585
Lard	"	201,153

DISEASES FOUND AT ESTABLISHMENTS UNDER INSPECTION.

Diseases	Cattle			Sheep			Swine			Poultry
	Carcases	Portions	Lb.	Carcases	Portions	Lb.	Carcases	Portions	Lb.	Lb.
Abscess	15	40,739		5	247		10	6,196		
Actinomycosis	40	41,393					2	3,759		
Adhesions		12,357			933			10,641		
Arthritis	17	14		5	12		56	388		
Angiomatosis		5,218								
Bruises	172	109,341	10,595	21	1,082		14	17,328	43,859	
Cripples	258	301		36	27		92	9,167		
Cysts		615			285			3,962		
Cysticercus Bovis	151	2,893								
Cysticercus Cellulosae							324	171		
Cysticercus Ovis				14	196					
Cysticercus Tennicollis				1	327					
Congestion		27			445		3	178		
Cirrhosis		31			2			147		
Decomposed			149,161			1,644			54,410	
Dirty		6,673	390,113		589	1,032		9,107	163,215	
Emaciation	348			138			27			
Enteritis	7			4			33			
Emphysema		1		3			1	203		
Hernia		7			2			101		
Hydraemia	79			61			4			
Hog Cholera							204			
Immaturity	2,089	4		4						
Improper Bleeding	18			14			42			
Inflamation	2			1			17			
Icterus	7			4			12			
Induration										
Metritis	36			4			20			
Mucoid Degeneration	408									
Melanosis		4						2		
Necrosis		39			511			5,714		
Nephritis	14			3			8			
Parasites		4,987		2	103,778		3	66,389		
Pericarditis	57			1			8			
Peritonitis	47			7			107			
Pleuritis	21			3			96			
Pneumonia	158			110			177			
Pyemia or Septicaemia	330			25			258			
Sexual Smell				3			10	1,027		
Skin Disease		11					3	1,667		
Sarcoma	16						5			

DISEASES FOUND AT ESTABLISHMENTS UNDER INSPECTION—*Concluded*

Diseases	Cattle			Sheep			Swine			Poultry
	Carcases	Portions	Lb.	Carcases	Portions	Lb.	Carcases	Portions	Lb.	Lb.
Sour			177,745			4,026			142,960	
Septic Infection	25									
Tuberculosis	5,156	37,770		1			3,786	863,079		
Tumours	6	17					8	9		
Uræmia	3						6			
Various	95	2,136		12	42	2,213	89	1,446	335	
Total	9,575	264 578	727,614	482	108,478	8,915	5,425	1,060,681	404,779	2,257 and 181 carcases
Found dead	811			673			2,449			

FRUITS AND VEGETABLES. EVAPORATED AND CONDENSED MILK

In June of this year by Order in Council new standards of quality were adopted for fruits, vegetables and evaporated apples. These standards were the result of information that had been gathered and practical canning tests that had been made during the past number of years.

It had been felt that the consumers had no means whatever of forming an opinion as to the contents of a package by a study of the label that was placed thereon. Neither did there appear to be any protection for the manufacturer who was packing a really high grade article as these products were placed in hermetically sealed containers. As the result of an examination of a number of samples it is safe to say that the poorest quality found was invariably labelled with the most expensive labels and the statements appearing on these labels were entirely contrary to the facts.

The standards as promulgated were very carefully considered. They were submitted to the manufacturers a year previous to their becoming law and an inspector of the department went from place to place throughout the country and actually packed in the different canneries their various canned products in accordance with the requirements of these standards, thus demonstrating beyond question that the standards were practical and that any manufacturer could, if he wished, grade his products in such a manner that a statement could be placed upon the tin which would afford the purchaser a reasonably accurate knowledge of the contents.

This procedure was a step in advance of that followed by manufacturers and canners of any other country in the world and has received the strong commendation of those engaged in this trade in other countries, so much so that the California Canners, the largest organization in existence, have adopted our nomenclature.

On the strength of these standards of quality and our supervision and inspection Canada was able to sell to the Allies over a million pounds of evaporated apples at a higher price than was paid for the best quality of a similar product purchased in the United States. This is indeed gratifying in view of the fact that the Dominion had lost entirely her export trade in evaporated apples, except with the United States, owing to the manner in which this product had been forwarded in past years to South Africa and continental Europe.

On account of wages being high and tin and raw materials costing decidedly more than in previous years, the pack of canned fruits and vegetables was somewhat restricted, which tended to further increase the already high price of these products. It is to be hoped that with a return to normal conditions and an increase in production this class of foods will soon be reduced in cost. With the supervision now being exercised over these products and the wonderful improvement in the sanitary conditions surrounding their manufacture, the increase in the consumption of canned fruits and vegetables should be such as would make this one of the greatest industries of the Dominion. Situated as we are, with such favourable conditions for the production of fruits and vegetables, their economical handling by modern canners should result in the placing on the market of a necessary food at a price that could be taken full advantage of by all classes.

The season for evaporated apples was somewhat short and the quantity manufactured rather below normal, yet our ability to sell to the Allied Purchasing Commission the quantity above mentioned placed the Canadian market in a very favourable condition and the demand was keen. The rigid enforcement of the law regarding moisture has removed one of the greatest difficulties in regard to the keeping qualities of this product. With the new standards of quality, which will be just as rigidly enforced, we are looking forward to a greater development in this particular trade.

During the year, at the request of the Allied Purchasing Commission, we continued not only the supervision of the establishments engaged in the preparation of evaporated and condensed milk but assumed the responsibility of checking up the weight and quality of this product, with the result that we were able to find a ready export market for all that Canada could produce and it is safe to say that we would not have been able to obtain and hold this market if it had not been for the supervision and control given us under the Act.

Little trouble was experienced in maintaining satisfactory sanitary conditions in the different establishments. The majority of plants are clean and little fault can be found with them. There are, however, some and probably there will always be a few that require close supervision and watching to keep them up to the mark. This is not so much due to unwillingness on the part of the manufacturer to obey the law, but rather to carelessness and the lack of knowledge of what constitutes cleanliness.

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

FOR THE

YEAR ENDING MARCH 31, 1920

CONTAGIOUS DISEASES DIVISION

The high standard of health of Canadian live stock has been maintained throughout the year. No extensive visitation of contagious disease has occurred and further progress has been made in the control of those diseases, such as glanders, hog cholera, and cattle mange which still persist to a limited extent in some parts of this vast country.

These diseases are separately reported upon in the following pages.

GLANDERS

A further reduction in the number of cases in comparison with last year, and the limitation of the disease to two provinces only are satisfactory features of the situation. All the outbreaks have been efficiently dealt with and the disease eradicated.

GLANDERS STATISTICS BY PROVINCES APRIL 1, 1919 TO MARCH 31, 1920

Province	Horses, mules and asses tested and found healthy	Horses killed	Valued at $ cts.	Compensation paid $ cts.	Clinical reactors	Electoral district in which glanders was detected	Remarks
Nova Scotia	4						
New Brunswick	130						
Quebec	1,101						
Ontario	359						
Manitoba	1,987	55	10,095 00	6,729,83	8	55 Dauphin.	43 at first test. 11 at second test. 1 at third test.
Saskatchewan	1,851	1	50 00	33 33		Weyburn.	At first test.
Alberta	1,426						
British Columbia and Yukon	416						
Total	7,274	56	10,145 00	6,763 16	8		

COMPENSATION PAID IN PREVIOUS YEARS

Disease	1904–5	1905–6 5 mos.	1906–7	1907–8	1908–9	1909–10	1910–11	1911–12	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20
	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
Glanders	147,851	108,045	142,057	102,868	73,386	48,686	57,122	77,439	60,271	34,563	35,556	23,102	22,238	19,849	9,506	6,763
Hog cholera	5,412	1,709	2,193	3,079	9,912	7,087	8,818	23,446	52,785	61,588	196,981	33,699	30,497	13,031	23,342	19,001
Dourine	16,029	6,806	10,336	3,449	2,506	3,419	3,406	1,740	2,096	48,743	32,080	17,389	3,222	1,340	261	70
Tuberculosis												*3,144	2,362	11,149	10,201	**31,726
	$169,292	116,560	154,586	109,396	85,804	59,192	69,346	102,625	115,152	144,894	264,617	77,334	58,319	45,369	43,310	57,560

*Municipal testing begun in this year. **Accredited herd control work begun in this year.

ANIMALS SLAUGHTERED IN PREVIOUS YEARS

Disease	1904–5	1905–6 5 mos.	1906–7	1907–8	1908–9	1909–10	1910–11	1911–12	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20
Glanders	2,113	1,387	1,881	1,324	981	627	666	853	638	353	338	241	228	190	83	56
Hog cholera	1,110	376	228	553	1,881	1,127	1,346	4,249	8,466	9,900	34,779	5,700	4,623	2,212	2,163	1,642
Dourine	292	120	167	49	28	37	41	18	18	471	394	228	48	16	5	2
Tuberculosis												144	101	284	181	330

HOG CHOLERA

Work during the year followed the lines previously adopted, namely, licensing of all premises where collected garbage is fed to hogs, frequent inspection of these premises and herds of hogs thereon, enforced cooking of garbage before feeding it to hogs, prompt notification when disease is suspected, and vigorous eradication of hog cholera wherever found. This is followed by disinfection of premises and a period of three months quarantine during which no fresh hogs are allowed upon the premises.

Experience shows that nearly all hog cholera in Canada originates on premises where garbage is fed to hogs. Cooking is an effectual safeguard when properly done, but many men are careless and indifferent, the cost of fuel is an item to avoid, and consequently the cooking is often insufficient and frequently neglected altogether. The carelessness of the individual may then be followed by an outbreak of hog cholera and involve his neighbours' pigs as well as his own.

Such neglect cannot be passed over without putting a premium on carelessness, and placing the man who is honestly trying to carry out the rules laid down in the regulations at a disadvantage as compared with the happy-go-lucky man who only half cooks his garbage or cooks it not at all.

The department has therefore felt it necessary to prosecute many cases of this kind and has secured a large number of convictions. These should have the effect of impressing upon garbage feeders the necessity of carrying out the regulations as regards the cooking of garbage, and thus eventually reduce our annual losses from this disease.

As garbage feeding is followed in the proximity of all large towns and cities in Canada it may be expected that outbreaks may occur in any province at any time. That such is the case is shown in the following table:—

HOG CHOLERA STATISTICS BY PROVINCES, APRIL 1, 1919 TO MARCH 31, 1920

Province	No. of outbreaks	No. of hogs involved	No. of hogs slaughtered	Valued at	Compensation paid	Premises quarantined on suspicion	No. of hogs involved	No. of hogs slaughtered for examination	Value.
				$ cts.	$ cts.				$ cts.
Nova Scotia	2	478	32	605 00	403 33	.....	.....	.....	.....
Ontario	54	1,606	631	11,693 00	7,201 50	142	2,705	58	1,102 00
Manitoba	19	1,965	375	7,430 00	4,633 26	14	168	2	40 00
Saskatchewan	6	248	245	4,647 60	3,098 37	8	65	3	45 00
Alberta	5	405	256	3,484 00	2,322 63	20	772	2	38 00
British Columbia	6	283	103	2,014 00	1,342 62	13	257	.....	.....
Total	92	4,985	1,642	29,873 60	19,001 71	197	3,967	65	1,225 00

HOG CHOLERA OUTBREAKS BY PROVINCES

Province	Electoral District	No. of outbreaks	Hogs destroyed
Nova Scotia	Halifax	2	32
Ontario	Essex, North	32	334
	Essex, South	4	36
	York, South	6	118
	York, West	3	47
	Toronto, West	3	18
	Welland	2	20
	Rainy River	2	37
	Lambton, West	1	3
	Algoma, West	1	18
Manitoba	Winnipeg, Centre	5	227
	Winnipeg, North	1	35
	Springfield	7	79
	Portage	3	9
	Selkirk	1	5
	Lisgar	1	8
	Brandon	1	12
Saskatchewan	Moosejaw	5	202
	Kindersley	1	43
Alberta	Strathcona	2	103
	Edmonton, East	1	55
	Calgary, East	2	98
British Columbia	Cariboo	1	5
	Vancouver, South	3	58
	New Westminster	1	26
	Nanaimo	1	14

DOURINE

There is every reason to believe that this disease is now entirely eradicated in Canada. Blood testing was continued during the year and included all stallions in the district where the disease was formerly prevalent and also the horses and mares in the Blood Indian reserve—not a single reactor was found, but a few mares whose tests were not absolutely satisfactory were slaughtered as a precautionary measure.

Two animals were handed over to the Research Laboratory, both having given questionable reaction: Value, $105; compensation, $70.

Fifty-one animals were quarantined on suspicion, distributed as follows:—

District	Province	Suspects and Quarantined	Destroyed
North Battleford	Saskatchewan	43	
Weybura	"	2	
Prince Albert	"	1	
Regina	"	1	
Lethbridge	Alberta	3	1
Bow River	"	1	
Macleod	"		1
		51	2

SCABIES

In preparation for a determined effort to stamp out cattle mange in the mange area of Alberta during the summer of 1920, several meetings were held in Calgary at which the ranchers and farmers of the area met with officials of the Department of Agriculture. After a full discussion of the situation, the stockmen pledged their hearty co-operation in the effort to be made and plans were outlined for carrying out the work.

Following this the whole area was sub-divided into dipping districts. A meeting was held in each district at which one of the veterinary inspectors of this branch was present and after free and full discussion an organization was created. Resulting from this work, every dipping district was equipped with a staff whose members were selected by the farmers themselves, to look after the construction of the dipping vat if a new one was needed, the repairing of existing vats, the preparation of the dipping mixture and maintaining it at the proper temperature and strength, the bringing of the cattle to the dipping vats, their subsequent isolation from undipped cattle, the reporting of owners neglecting to bring cattle to the dip, and the keeping of records of the number of cattle put through the dip.

The department made a grant of $400 towards the construction of new vats provided the location was approved and the vat constructed in accordance with the standard plan.

With these careful preparations it is hoped as soon as favourable weather permits, to dip twice all the cattle in the mange area, and following this, if the dipping has been succesfully carried out, to remove the restrictions now in force in this district, abolishing the mange area.

CATTLE MANGE

Province	Outbreaks	Animals Affected	Animals Quarantined
Manitoba	....	....	127
Saskatchewan	26	284	13,548
Alberta	284	2,079	107,526
British Columbia	2	3	122
Total	312	2,366	121,323

One hundred and ninety-eight thousand seven hundred and twenty cattle and 3,313 calves were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan and 173,508 cattle were inspected on arrival in Winnipeg.

HORSE MANGE

Province	Outbreaks	Animals Affected	Animals Quarantined
Ontario	1	3	6
Manitoba	13	37	98
Saskatchewan	4	8	38
Total	18	48	142

Five thousand four hundred and fifteen horses and eight mules were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

SHEEP SCAB

A limited amount of this disease was found to exist in the provinces of Manitoba and Saskatchewan and eradicated by dipping. The origin of these outbreaks has not been definitely ascertained, but as the disease in not known to exist elsewhere in Canada and the outbreaks occurred in the Southern part of the provinces named and not far from the International boundary there is some reason for believing that it may have been introduced by smuggling in sheep from the United States.

Province	Outbreaks	Animals Affected	Animals Quarantined
Manitoba	4	407	1,421
Saskatchewan	2	268	568
Total	6	675	1,989

ANTHRAX

No outbreaks were dealt with during the year. 277 animals were quarantined on suspicion.

Province	Animals Quarantined
Quebec	179
Ontario	33
Alberta	65
Total	277

ULCERATIVE LYMPHANGITIS

(Preiss-Nocard disease)

The return of horses to Canada from France following the armistice was strongly opposed by this branch, as it was considered highly probable that they might introduce diseases unknown in Canada. Importation was therefore limited to a small number of officers chargers to the number of 105. These were landed in Montreal and placed in strict quarantine for a period of six months, and submitted to frequent inspection by our veterinary experts and the usual mallein test. Shortly after the horses went into quarantine one was noticed to be suffering from slight swelling of the right hind leg and the appearance of a small inflamed area. He was promptly removed from the stable containing the other horses and placed in one corner of a large building and strictly isolated. This building also contained four other horses suspected of mange and these were tied at intervals of about 25 feet down the side of the same building in which the first suspect was placed. Conditions were such that each horse in this building could not possibly touch its neighbouring horse, and separate stable utensils were used for each. The building was a large one having formed part of the Remount depot and could hold about 200 horses.

The inflamed area on the leg of the first horse rapidly developed into an ulcer and was strongly suggestive of ulcerative lymphangitis, a highly communicable disease which gave much trouble among army horses in France. The return of Capt. E. A. Watson at this time gave the opportunity of using the skill and experience of an officer who had seen much of the disease, and a positive diagnosis was reached, not only from the characteristic features of the case, but by the application of a specific laboratory test to the blood. The horse was destroyed and all possible precautions taken in the way of disinfection to prevent dissemination of the disease.

The second case occurred in the horse tied next to the one destroyed, although there was no reason to believe that they had ever been in contact either directly or indirectly. As soon as a positive diagnosis was reached this horse was destroyed and disinfection of the building repeated.

A third case developed a month later and this was the third animal in the row from the one in the corner. This was followed by the fourth some time later. The disease had now passed down the row, taking one horse after another in regular succession, until only one remained.

As the large building was now very cold for a single horse it was removed to a box stall in a third building. It appeared quite healthy, but strict isolation was maintained. About this time the blood test previously referred to was applied to the horses in the first barn, none of which reacted. The animal in isolation however gave a strong positive reaction. As the period of quarantine was now nearing its close, it was decided to kill her without waiting for symptoms to develop.

The period of quarantine for the other horses was completed without any further cases developing. Blood tests revealed no cause for suspicion and they were released to their owners.

Confirmation of the nature of the disease was obtained by the isolation of the Preiss Nocard bacillus in pure culture and its maintenance in the laboratory.

TUBERCULOSIS

The accredited herd plan now in successful operation for over two years in the United States was put in operation in Canada by Order in Council dated September 20, 1919, and the following regulations put into effect:—

Regulations of the Establishment and Maintenance of Tuberculosis-Free Accredited Herds of Cattle

1. A tuberculosis-free accredited pure-bred herd is one which has been tuberculin tested by the subcutaneous method, or any other test approved by the Veterinary Director General, and applied by the regularly employed veterinary inspectors of the Health of Animals Branch of the Federal Department of Agriculture. Further, it shall be a herd in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, as above described, and by physical examination.

2. The entire herd, or any cattle in the herd, shall be tuberculin tested or retested at such time as is considered necessary by the Veterinary Director General.

3. No cattle shall be presented to the tuberculin test which have been injected with tuberculin within 60 days immediately preceding or which have at any time reacted to a tuberculin test.

4. No herd shall be classed as an accredited herd in which tuberculosis has been found by the application of the test, as referred to in paragraph 1, until such herd has been successfully subjected to two consecutive tests with tuberculin, applied at intervals of not less than six months, the first interval dating from the time of removal of the tuberculous animals from the herd.

5. Prior to each tuberculin test satisfactory evidence of the identity of the registered animal shall be presented to the inspector. Any grade cattle maintained in the herd, or associated with animals of the herd, shall be identified by a tag or other markings satisfactory to the Veterinary Director General.

6. All removals of registered cattle from the herd, either by sale, death or slaughter, shall be reported promptly to the said Veterinary Director General, giving the identification of the animals, and, if so, the name and address of the person to whom transferred. If the transfer is made from the accredited herd to another accredited herd, the shipment shall be made only in properly cleaned and disinfected cars. No cattle shall be allowed to associate with the herd which have not passed a tuberculin test approved by the Veterinary Director General.

7. All milk and other dairy products fed to calves shall be that produced by an accredited herd, or, if from outside or unknown sources, it shall be pasteurized by heating to not less than 150°F. for not less than 20 minutes.

8. All reasonable sanitary measures and other recommendations by the Federal authorities for the control of tuberculosis shall be complied with.

9. Cattle from an accredited herd may be shipped to the United States accompanied by the certificate of the Veterinary Director General, without further tuberculin test for a period of one year, subject to the rules and regulations of the State of destination.

10. Strict compliance with these methods and rules shall entitle the owner of tuberculosis-free herds to a certificate, "Tuberculosis-Free Accredited Herd," to be issued by the Veterinary Director General. Said certificate shall be good for one year from date of test unless revoked at an earlier date.

11. Failure on the part of owners to comply with the letter or spirit of these methods and rules shall be considered sufficient cause for immediate cancellation of co-operation with them by the Federal officials.

12. Whenever in carrying out this order it is necessary to slaughter an animal or animals for the eradication of tuberculosis from a herd, the animal or animals shall be valued and compensation awarded as provided in Sections 6 and 7 of the Animal Contagious Diseases Act.

The announcement of these regulations was immediately followed by applications from many breeders to have their herds submitted to the test, and the figures in the accompanying table will show the extent to which this work has already grown.

MUNICIPAL TESTING

No new municipalities were taken on during the year, but all those already on out list continue to enjoy the advantages of a milk supply from tuberculin tested cows.

IMPROVEMENTS IN TESTING

Until recently, a subcutaneous or thermal tuberculin test has been the only one receiving general recognition, further experience with other tests, notably the intradermal, is strengthening the claims of its advocates as being of equal value. In some of the United States this test has been official for some time and it has certain inherent advantages which render it attractive to those in control work. It relieves the inspector of the drudgery of prolonged observation of temperature, it economizes the time of inspectors, and it is not readily interfered with by accidental or intentional influences. It can also be applied frequently to the same animal without producing immunity to tuberculin.

Tuberculin testing has been going on in many herds for several years, and with the repeated injection of tuberculin in the same animals, there is grave danger of producing a condition where tuberculin will give no reaction in a diseased animal when used in the subcutaneous test. The intradermal method will cause a reaction in most of such animals and is therefore of great value in testing herds where tuberculin has frequently been injected.

A third test, the opthalmic, is also receiving much attention and although not yet given the confidence of either of the other tests, is undoubtedly of value.

Combinations of two or three of these tests are now frequently used with advantage revealing cases of tuberculosis which a single test would have failed to pick out. The branch is making use of all these methods of testing from time to time with a view to attaining the highest possible efficiency in the detection of latent or obscure cases of tuberculosis, which if left in a herd in process of cleaning up for accreditation would sooner or later become 'spreaders' and disseminate the disease.

TUBERCULIN TESTING—ACCREDITED AND SUPERVISED HERDS, IMPORT, EXPORT AND GENERAL, APRIL 1, 1919 TO MARCH 31, 1920

Heading	Number tested	Reactors	Percentage of reactors	Value	Compensation paid	Number found suspicious	Healthy	Remarks
				$ cts.	$ cts.			
Accredited herds	2,173	212	9·75	32,743 00	21,827 95	.....	1,961	172 animals slaughtered. 33 being prepared for block. 15 under Bang system. 1 returned to previous owner. 90 herds under accreditation involving 3,791 cattle.
Import	833	8	0·96	.....	.....	1	824	
Export	3,910	115	2·94	.....	.....	19	3,776	
Supervised herds and for shipment to various provinces	3,550	341	9·50	.....	.....	16	3,193	
General testing by private practitioners with Departmental tuberculin	4,305	240	5·57	.....	.....	11	4,054	
Total	14,771	916	6·20	32,743 00	21,827 95	47	13,808	

TUBERCULOSIS MUNICIPAL TESTING, APRIL 1, 1919 TO MARCH 31, 1920

Town	Cattle tested. Number of test									Total cattle tested	Reactors	Percentage of reactors	Value	Compensation paid	Remarks
	1	2	3	4	5	6	7	8	9						
													$ cts.	$ cts.	
North Battleford, Sask..	127	62	107	64	55	16	1	4	3	439	5	1·13	734 00	489 32	5 reactors from previous year slaughtered and paid for.
Saskatoon, Sask.....	922	428	267	191	127	117	32	5	.....	2,089	27	1·29	2,615 00	1,743 26	
Regina, Sask.....	324	143	89	80	41	5	.....	.....	.....	682	15	2·19	1,560 00	1,039 95	1 reactor from previous year slaughtered and paid for.
Virden, Man.....	92	90	44	13	.....	.....	.....	.....	.....	239	14	5·85	1,290 00	859 95	6 reactors from previous year slaughtered and paid for.
Ottawa, Ont.....	871	526	243	91	40	31	12	.....	.....	1,814	85	4·68	8,650 00	5,766 38	
Total.....	2,336	1,249	750	439	263	169	45	9	3	5,263	146	2·77	14,849 00	9,898 86	

NOTE.—It must be remembered that most of the herds comprised in this table have been under test for one or more years and all reactors removed. Hence the comparatively low percentage of disease shown.

PATHOLOGICAL DIVISION

This division continues to supply the tuberculin, mallein and other biological agents required in the work of the branch, also manufacturing and distributing at the cost of production large amounts of blackleg vaccine for farmers to use in the protection of their herds.

It also renders most valuable service in the diagnosis of disease from specimens sent to the laboratories.

Research work is constantly being carried on in regard to diseases of animals, such problems as swamp fever of horses, contagious abortion, parasites of sheep and horses, receiving special attention. From time to time, as results are obtained, bulletins on these subjects will continue to be issued.

Fur farming is now receiving the attention it claims and the problems of the fox breeders are undergoing study with a view to preventing as far as possible the losses sustained by the industry from parasites and disease. The Dominion Research Council is co-operating with the branch in this work and through a subcommittee is supervising some experiments on the nutrition of foxes. These experiments, in charge of a biochemist of established reputation, will be carried out at the Research Station Hull as soon as the necessary pens for the foxes can be erected. Some of the fox breeders of Prince Edward Island have kindly offered to lend the department the foxes needed for the work, thus saving the expense of purchasing the animals. Experiments in nutrition must of necessity extend over a considerable period of time so that immediate results cannot be expected.

Investigation of the diseases and parasites of foxes in domestication will be carried on simultaneously by a pathologist of this division located in Prince Edward Island.

The following figures indicate the great increase in the work of preparing and disbursing biological products as compared with the two previous years.

	1917-18	1918-19	1919-20
	Doses	Doses	Doses
Tuberculin (Subcutaneous)	28,076	23,454	30,060
" Opthalmic	.....	.....	15,840
" Intradermal	200	.....	1,250
Total	28,276	23,454	47,150
Mallein	20,350	10,800	15,719
Blackleg vaccine	249,910	182,374	99,610
Anti-abortion vaccine	.....	1,042	1,936

IMPORT INSPECTIONS FROM UNITED STATES AND NEWFOUNDLAND.

Port	Horses	Mules	Cattle	Sheep	Swine	Goats
Sydney, N.S.	23	.....	.....	.....	1	1
Yarmouth, N.S.	7	.....	2	.....	1	.....
St. John, N.B.	57	.....	98	37	.....	.....
St. Stephen, N.B.	20	.....	11	.....	.....	.....
McAdam Jct., N.B.	43	2	11	2	3	4
Debec Jct., N.B.	7	2	3	.....	.....	.....
Woodstock, N.B.	48	.....	14	.....	.....	.....
Centreville, N.B.	7	.....	2	.....	.....	.....
Aroostook Jct., N.B.	72	2	23	.....	.....	.....
Grand Falls, N.B.	9	.....	.....	.....	.....	.....
St. Leonards, N.B.	3	.....	.....	.....	.....	.....
Edmundston, N.B.	9	.....	3	.....	.....	.....
Florenceville, N.B.	4	1	2	.....	.....	.....
N. B. General	2	.....	.....	.....	.....	.....
Quebec, Que.	22	.....	.....	.....	.....	.....
Comins Mills, P.Q.	8	.....	14	.....	.....	.....

IMPORT INSPECTIONS FROM UNITED STATES AND NEWFOUNDLAND—*Concluded.*

Port	Horses	Mules	Cattle	Sheep	Swine	Goats	
Lake Megantic, Que	97		1				
Beauceville, P.Q	531						
Coaticook, P.Q	3		7				
Beebe Jct., P.Q	34		20				
Sherbrooke, P.Q	223	1	8				
Highwater, P.Q	21		5				
Abercorn, P.Q	7						
St. Armand, P.Q	36						
Lacolle Jct., P.Q	126	2	6	4			
Noyan Jct., P.Q	5		6				
St. Johns, P.Q	12	2	4				
Montreal, P.Q	20						
Athelstan, P.Q	75	2	1				
Dundee, P.Q	35		113				
St. Agnes de Dundee, Que	1						
Trout River, P.Q	5		2				
Quebec General	3						
Cornwall, Ont	11		4				
Prescott, Ont	46	3					
Morrisburg, Ont	3		5				
Brockville, Ont	21		8				
Kingston, Ont	8		1				
Toronto, Ont	1						
Niagara Falls, Ont	522	55	40	44		1	
Bridgeburg, Ont	164	6	14	3	9	3	Also 2 camel.
Windsor, Ont	240	10	96	25	43	5	Also 1 deer.
Sarnia, Ont	192	4	74	192	17	2	Also 1 buffalo and 2 elk.
Sault Ste. Marie, Ont	49		16		2	5	
Rainy River, Ont	21	2	19				
Fort Frances, Ont	105		17		5		Also 1 jackass and 2 ponies.
Emerson, Man	2,420	90	381	3,376	44	2	
Gretna, Man	196	4	111	6			
Snowflake, Man	81		23				
Bannerman, Man	340	3	152		1		
Manitoba General	26		3				
North Portal, Sask	1,931	44	2,586	27	52		
Northgate, Sask	384		33				
Big Muddy, Sask	709	11	42				
Willow Creek, Sask	447	6	5,194	325			
West Poplar, Sask	554	17	67	3,136			
Saskatchewan General	7		6				
Pinhorn, Alta	111		9				
Coutts, Alta	2,766	45	2,367	24,576	20	6	Also 294 elk and 2 donkeys.
Twin Lakes, Alta	309	4	1,399	7,109			
Newgate, B.C	131	2	22				
Kingsgate, B.C	769	22	271	5,436		9	
Nelson, B.C	22		63	294		2	
Rykerts, B.C			2				
Rossland, B.C	13		197	81			
Grand Forks, B.C	92		100				
Midway, B.C	12		256				
Myncaster, B.C	3						
Bridesville, B.C	39		16				
Keremeos, B.C	62	1	627				
Osoyoos, B.C	192		103	2,813			
Huntingdon, B.C	98	3	542				
New Westminster, B.C	4		29				
White Rock, B.C	529		1,121	235		18	
Vancouver, B.C	296	4		1,270		1	
Victoria, B.C	102	23	27	2		6	
Cascade, B.C	20		13				
White Horse, Y.T	21		81				
Forty Mile, Y.T	134						
Total	15,778	373	16,493	48,993	198	66	

SESSIONAL PAPER No. 15b

IMPORT INSPECTIONS FROM EUROPE AND ELSEWHERE THAN UNITED STATES AND NEWFOUNDLAND.

St. John, N.B.	31	.....	98	.....	.....	.....
Quebec, Que.	.....	.....	163	631	2	.....
Montreal, Que.	20	.....	.....	37	.....	.....
Total	51	.....	261	668	2	.....

IMPORT TESTING—GLANDERS.

Entered at	No tested	Entered at	No tested
		Brought forward	664
Yarmouth, N.S.	4	Bridgeburg, Ont.	16
St. John, N.B.	4	Windsor, Ont.	46
St. Stephen, N.B.	4	Sarnia, Ont.	45
McAdam Junction, N.B.	30	Sault Ste. Marie, Ont.	17
Debec Jct., N.B.	3	Rainy River, Ont.	19
Woodstock, N.B.	19	Fort Frances, Ont.	52
Centreville, N.B.	7	Emerson, Man.	640
Aroostook Jct., N.B.	35	Gretna, Man.	128
Grand Falls, N.B.	11	Snowflake, Man.	53
St. Leonards, N.B	3	Bannerman, Man.	181
Edmundston, N.B.	8	Sprague, Man.	25
Florenceville, N.B.	3	North Portal, Sask.	635
Comins Mills, Que.	1	Northgate, Sask.	257
Lake Megantic, Que.	89	Big Muddy, Sask.	125
Beauceville, Que.	61	Willow Creek, Sask.	447
Coaticook, Que.	3	West Poplar, Sask.	344
Beebe Jct., Que.	28	Pinhorn, Alta.	111
Sherbrooke, Que.	220	Coutts, Alta.	1,098
Highwater, Que.	4	Twin Lakes, Alta.	179
Abercorn, Que.	6	Newgate, B.C.	123
St. Armand, Que.	11	Kingsgate, B.C.	95
Lacolle Jct., Que.	4	Nelson, B.C.	3
Noyan Jct., Que.	5	Rossland, B.C.	10
St. Johns, Que.	11	Grand Forks, B.C.	92
Athelstan, Que.	17	Midway, B.C.	12
Dundee, Que.	6	Myncaster, B.C.	3
St. Agnes de Dundee, Que.	1	Bridesville, B.C.	38
Trout River, Que.	4	Keremeos, B.C.	25
Cornwall, Ont	9	Osoyoos, B.C.	87
Prescott, Ont.	5	Huntingdon, B.C.	54
Morrisburg, Ont.	2	New Westminster,	4
Brockville, Ont.	1	White Rock, B.C.	16
Kingston, Ont.	8	Vancouver, B.C.	3
Toronto, Ont.	1	Victoria, B.C.	1
Niagara Falls, Ont.	37	Cascade, B.C.	16
Forward	664	Total	5,034

PURE-BRED IMPORTS.

HORSES.

Breed—	Great Britain	United States	Total
Belgian	..	84	84
Clydesdale	45	2	47
Shetland	..	2	2
Percheron	..	249	249
Shetland	..	2	2
Standardbred	..	17	17
Suffolk	..	5	5
Thoroughbred	5	40	45
Trottingbred	..	3	3
	51	400	451

PURE-BRED IMPORTS—*Concluded.*

CATTLE

Breed—	Great Britain	United States	Total
Aberdeen Angus	..	12	12
Durham	..	2	2
Guernsey	..	9	9
Hereford	..	39	39
Holstein	..	38	38
Jersey	44	17	61
Polled Angus	..	7	7
Shorthorn	52	25	77
Ayrshire	165	5	170
	261	154	415

SHEEP

Breed—	Great Britain	United States	Australia	Total
Corriedale	..	..	17	17
Dorset	..	5	..	5
Hampshire	166	..	..	166
Leicester	12	..	..	12
Lincoln	18	..	..	18
Oxford	33	..	..	33
Romney Marsh	143	..	..	143
Shropshire	243	..	..	243
Southdown	18	..	..	18
Suffolk	35	..	..	35
	668	5	17	690

SWINE

Breed—	Great Britain	United States	Total
Berkshire	..	27	27
Chester White	..	11	11
Poland China	..	8	8
Yorkshire	2	.	2
O.G.C.	..	21	21
Duroc Jersey	..	16	16
	2	83	85

ANIMALS INSPECTED FOR EXPORT

Port	Horses	Cattle	Sheep	Swine	Goats
Charlottetown to Newfoundland	..	15	..	..	..
Sydney to Newfoundland	779	2,774	1,532	398	..
Sydney to St. Pierre	1	..	..	..	..
Halifax to St. Pierre	4	119	23	6	..
Halifax to Bermuda	53	50	..	122	..
St. John to Bermuda	..	7	..	..	..
St. John to Europe	..	180	..	..	..
Montreal to Europe	4	2,473	..	..	..
Montreal to Europe (via Boston)	39	180	..	.	..
Montreal to Great Britain	105	..	..	.	..
Toronto to United States	..	64,741	8,620	74	..
Toronto to Europe	42	2,521	..	..	..
General Inspection Ontario to United States	..	261	10	..	..
Winnipeg to United States	..	151,217	1,647	327	..
North Portal to United States	89	94,194	6,118	38	..
General Inspection Saskatchewan to United States	3	30	..	..	..
General Inspection British Columbia to United States	..	12	111	14	10
Total	1,119	318,776	18,561	979	10

EXPORT ANIMALS REJECTED AT THE FOLLOWING PORTS.

Port	Horses	Cattle
Sydney	2	6
Montreal	..	14
Total	2	20

MEAT AND CANNED FOODS DIVISION

MEAT AND MEAT FOOD PRODUCTS

The slaughter for this year showed a slight increase over that of previous years, particularly in the case of sheep, which was 51 per cent greater than during the preceding twelve months. The killing of cattle increased almost 9 per cent but there was a decrease in hogs of almost 7 per cent.

Owing to the return of a large number of veterinarians from the front, it was possible to secure a number of inspectors who had been previously in the employment of this division, and in a slight measure this relieved the extreme pressure under which the staff had been labouring for the past five years

In co-operation with the Dairy Branch a number of prosecutions were instituted for infractions of the oleomargarine law and convictions were secured.

Two new oleomargarine plants started operation since the last annual report was made. Owing, however, to the rigid enforcement of the requirements of the law and to an apparent lack of knowledge on the part of the manufacturers, these establishments soon ceased work.

During the year the packing plant at Chatham re-opened under new management.

Extensive additions, changes and general overhauling took place in the establishments under inspection during the course of the year and the managements of these plants are to be commended on the manner in which they have carried out these requirements, particularly in view of the extremely high cost of material and labour.

A number of plants have adopted towards their employees a commendable attitude and one quite different to that assumed by some establishments in years gone by. They have instituted cafeterias in which the employees are furnished with meals at cost, rest rooms and reading rooms are supplied, halls are provided for different forms of entertainment and quite modern, though small, hospitals are maintained. This has tended to create a much better feeling and understanding between employer and employee and this naturally results in increased efficiency.

Complete and detailed statistics covering the work of the Meat Inspection Division are attached.

A. Total slaughter:—

Cattle..... 965,394—Increase over 1918-19 of 77,621 head or 8·86 per cent.
Sheep..... 601,170—Increase over 1918-19 of 203,209 head or 51·06 "
Swine.....2,171,650—Decrease under 1918-19 of 161,704 head or 6·93 "

B. The provinces show increases or decreases as follows;—

	Cattle		Sheep		Swine	
	Head	%	Head	%	Head	%
Ontario	+ 2,161	0·58	+110,869	57·23	+122,507	9·78
Quebec	+44,636	19·30	+ 57,384	64·20	− 9,037	2·72
Manitoba	+ 3,522	2·83	+ 10,371	31·95	−125,346	39·86
Saskatchewan	+11,511	34·07	− 931	16·37	− 23,613	29·17
Alberta	+15,960	15·48	+ 17,296	44·14	−125,091	42·89
British Columbia	+ 1,741	7·20	+ 8,293	79·77	− 2,064	5·36
New Brunswick	− 523	58·84	− 4,040	35·57	.....	.....
Nova Scotia	.....	.....	.....	.....	.....	.....
Prince Edward Island	− 1,387	42·62	+ 3,967	25·11	+ 940	3·98

C. The percentage of slaughter for each province to the total for Canada:—

—	Cattle	Sheep	Swine
	%	%	%
Ontario	38·24	50·66	63·30
Quebec	28·58	24·42	14·87
Manitoba	13·25	7·12	8·72
Saskatchewan	4·69	0·79	2·64
Alberta	12·33	9·39	7·67
British Columbia	2·68	3·11	1·67
New Brunswick	0·04	1·22	.....
Nova Scotia	.....	.....	.....
Prince Edward Island	0·19	3·29	1·13

Slaughterings (Table B)

Cattle.—The only provinces which do not show an increase are New Brunswick and Prince Edward Island, the relative increases being much below those of last year, especially Ontario, which was 9·52 per cent last period against 0·58 per cent this year; Saskatchewan last period 92·50 per cent, against 34·97 per cent this year. New Brunswick shows a decrease of 58·84 per cent, against an increase of 158·43 last year, and Prince Edward Island a decrease this year of 42·62 per cent, against 0·37 per cent last year.

Sheep.—With the exception of Saskatchewan and New Brunswick, all provinces show a decided increase both actual and relative, more especially Ontario, where the relative increase was 57·23 per cent.

Canada must still produce more mutton before we can stop importing.

Swine.—As was expected large decreases occurred, except in Ontario, where the relative increase was 9·78 per cent, and Prince Edward Island, where the relative increase was 3·98 per cent.

This decrease in hog production is serious and may adversely affect our good standing on the English market because that market must have a steady supply. Our Wiltshire are equal to the best of the imported bacon on the English market and the supply should be kept up.

With reference to the percentage of slaughter for each province to the total kill for all Canada (Table C), while Ontario still holds the lead as the largest killing province it is falling off in cattle, this year's percentage of 38·24 is lower than last year's, which was 41·33 per cent, and 45·33 per cent the previous year.

In sheep Ontario improved her position, the percentage being 2 per cent higher than last year.

The increased percentage in hogs is more noticeable this year, being 63·30 per cent against 53·66 per cent last year.

The provinces of Manitoba, Saskatchewan and Alberta reduced their killing percentage from 13·48 per cent, 3·47 per cent, and 12·50 per cent respectively last year to 8·72 per cent, 2·64 per cent, and 7·67 per cent respectively this year.

During the course of reinspection the following meats were condemned:—

—	Cattle	Sheep	Swine	Poultry
	lbs.	lbs.	lbs.	lbs.
Bruised	77,144	237	80,644	.....
Decomposed	129,264	5,831	69,872	.....
Dirty	434,946	2,940	208,737	.....
Sour	113,708	3,728	204,214	.....
Various	3,039	.....	21,422	63
Total	758,101	12,736	584,889	63

Total amount condemned on reinspection 1,355,789 pounds.

Carcase Condemnations

The percentage of cattle condemned to total kill is somewhat higher than last year, being 1·28 per cent against 1·07 per cent last year. Sheep condemnations are 0·20 per cent against 0·12 per cent last year, and swine 0·23 per cent the same as last year.

In cattle we find as usual, that tuberculosis takes the highest toll in condemnations, although this year's total is much below last year's 39·42 per cent against 53·85 per cent.

Immaturity in calves accounted for 4,313 which is 34·96 per cent of carcases condemned and much higher than last year, which was 21·18 per cent.

Emaciation claims 7·28 per cent against 3·63 per cent last year. The greater part of these cattle were starved owing to blizzards in the western provinces. The same cause accounts for the large number of sheep condemned for emaciation.

The other condemnations are about the same or a little lower than last year.

Tuberculosis in swine is a shade lower than last year by 69·55 per cent against 69·78 per cent.

This disease in swine could be wiped out or nearly so, if we had compulsory pasteurization of milk and its by-products, used for the feeding of swine.

All other condemnations in swine are about the same as last year.

It is interesting to note the large number of cattle exported this year compared with last year, 515,000 against 311,000 last year. Of this total 84,000 were one year and under, American cattle prices being much higher than Canadian, while in hogs the reverse held good.

The following is a comparison between the hog killings of Canada, Denmark and Ireland for calendar years 1912 to 1919:—

	Canada	Denmark	Ireland
1912	1,650,966	2,084,786	1,416,490
1913	1,564,246	2,215,850	1,181,285
1914	2,255,479	2,654,041	1,266,620
1915	2,616,461	1,960,965	1,376,063
1916	2,313,389	1,534,011	1,277,900
1917	2,086,009	1,000,000	967,475
1918	2,259,736	*638,000	730,177
1919	2,332,387	*650,000	878,465

* Estimated.

The following summary shows the result of post mortem inspections of cattle, sheep and swine, from April 1, 1919, to March 31, 1920:—

Cattle marked "Canada Approved"	953,058
Carcases of cattle "Condemned"	12,336
Percentage of cattle "Condemned"	1.28%
Portions of cattle "Condemned"	250,051
Sheep marked "Canada Approved"	599,986
Carcases of sheep "Condemned"	1,184
Portions of sheep "Condemned"	150,821
Percentage of sheep "Condemned"	0.20%
Swine marked "Canada Approved"	2,166,592
Carcases of swine "Condemned"	5,058
Percentage of swine "Condemned"	0.23%
Portions of swine "Condemned"	954,959
Total number of carcases "Passed"	3,719,636
Total number of carcases "Condemned"	18,578
Percentage of carcases "Condemned"	0.50%
Total number of portions "Condemned"	1,355,831

In addition to the animals slaughtered at inspected establishments, the following amounts of dressed and cured meats and lard, etc., were received during the fiscal year from foreign countries:—

Beef	(lb.)	3,211,554
Mutton	"	2,191,572
Pork	"	55,745,805
Lard		5,176,538

DISEASES FOUND AT ESTABLISHMENTS UNDER INSPECTION

Diseases	Cattle			Sheep			Swine			Poultry
	Carcases	Portions	Lb.	Carcases	Portions	Lb.	Carcases	Portions	Lb.	Lb.
Abscess	10	42,164		15	382		8	5,887		
Actinomycosis	57	39,912			4		2	2,929		
Adhesions		15,654			1,519			9,190		
Arthritis	15	64		9	12		144	512		
Angiomatosis		2,711			1					
Bruises	208	89,090	77,144	49	1,848	237	17	10,354	80,644	
Cripples	251	355		31	71		55	9,519		
Cysts		2,144			237			2,932		
Cysticercus Bovis	131	2,073								
" Cellulosae							138	73		
" Ovis				18	260					
" Tenuicollis					289					
Congestion		35			20		1	145		
Cirrhosis		36					1	11		
Decomposed			129,264			5,831			69,872	
Dirty		14,694	434,946		2,167	2,940	1	12,039	208,737	
Emaciation	899			516			70			
Enteritis	11			9			21			
Emphysema	1	1						208		
Hernia		3			2			58		
Hydraemia	25			95			7			
Hog Cholera							249			
Immaturity	4,313			1						
Improper Bleeding	35			29			35			
Inflammation	6			1			8			
Icterus	11			7			24			
Induration								65		
Metritis	52			11			15			
Mucoid Degeneration	562			9						
Melanosis	1	20		1			1	3		
Necrosis		43		1	836			9,201		
Nephritis	32						11			
Parasites		4,461		1	140,801			92,968		
Pericarditis	95			5			15			
Peritonitis	75			21			151			
Pleuritis	24			6			61			
Pneumonia	147			242			146			
Pyemia or Septicaemia	310			54			231			
Sexual Smell							12	832		
Skin Disease		2					4	1,512		
Sarcoma	8			2			3			

Sour	.....	.....	113,708	.....	157	3,728	.....	204,214	.....	.....
Septic Infection	55	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tuberculosis	4863	34,805	.....	12	.....	.....	3,518	794,578	.....	.....
Tumours	3	9	.....	.....	.....	.....	6	.....	.....	.....
Uraemia	1	.....	.....	3	.....	.....	7	.....	.....	.....
Various	135	1,775	3,039	36	2,215	.....	96	1,943	21,422	.....
Total	12,336	250,051	758,101	1,184	150,821	12,736	5,058	954,959	584,889	63 lbs. and 86 carcases.
Found dead	472	.....	.....	836	.....	.....	2,574	.....	.....	.....

FRUITS, VEGETABLES AND CONDENSED MILK

Early in the year a meeting of the managements of the different factories engaged in the canning of fruits and vegetables, was held at Toronto. At this meeting the standards adopted the year previous were discussed fully, particular attention being given to their practical operation. A number of suggestions were received and minor criticisms were made which will be borne in mind at the time that new regulations are drafted.

A commendable spirit of co-operation was shown by the manufacturers at this meeting who in some instances were inconvenienced and perhaps put to considerable expense as a result of the new standards, yet they were quite ready to admit that they were fair and just to the manufacturer and would undoubtedly be the means whereby confidence would be established in the purchaser. New regulations or orders quite naturally require some little time to insure their enforcement in all their completeness without friction, yet it can be truly said that the objections made have been very few.

The greatest difficulty experienced by this office, was in the adjustment of the labels. The new law required that no labels should be used unless they had been approved. This involved a tremendous amount of work and it was surprising to find that hundreds of labels had been in use that did not conform with the law inasmuch as they did not give a true and correct description of the contents of the package on which they were placed. Some latitude however, was allowed the canner where the discrepancy on the label was not too glaring and permission was given for the reprinting of many thousands. At the same time it was necessary to absolutely forbid the use of others and to order the destruction of large quantities that could not be made to comply by any means whatever. Some manufacturers had purchased faulty labels when they might have known that the statements made thereon were absolutely contrary to the facts.

During the year inspectors of this division visited the majority of the wholesale houses throughout Canada and obtained samples of the products which had been shipped to them by the manufacturers. An examination was then made to determine whether or not the contents of the tins were actually what they were represented to be on the label. This has involved an immense amount of work which has been somewhat delayed owing to the small staff capable of carrying it out. The matter is now receiving more prompt attention and it is hoped that in the very near future a sufficient complement of qualified employees will be procured so that there will be absolutely no delay in reporting the results of such examinations.

Particular attention was given to the examination of imports and the evidence obtained will amply justify the control now vested in this branch by the amendment to the Act made a year ago.

Inspectors during the year visited regularly all the fruit and vegetable canneries as well as jam, jelly and pickle factories. From the reports received, these plants are, generally speaking, being maintained in a satisfactory condition.

Special attention was paid to establishments engaged in evaporating apples. The condition of these plants and the quality of the product being manufactured to-day as compared with that of a few years ago is ample justification for the money expended on their inspection and supervision.

The products now being exported from Canada will compare favourably with those from other countries, yet if the Canadian manufacturers want to establish themselves on our foreign markets, more attention must be paid to grading and to the handling and sale of this class of foods on a quality basis. It is a matter of surprise to find that the majority of the men responsible for the handling of these commo-

dities would, if left to themselves, pay no attention to the grading of the raw material or of the finished product. In too many instances they are content to hurry the fruit and vegetables into the cans and to get them on the market irrespective of the effect that such a procedure would have not only on the reputation of their own brands but on the trade in general.

There are, however, a number of establishments that are beginning, particularly of late, to pay more attention to the grading of their products and they are making an honest effort to place upon the market a really high-class food. With the rigorous enforcement of the standards of quality as shown in the new regulations these manufacturers will be protected to the extent that the careless or indifferent canner will not be permitted to show on his labels a quality above that which he actually produces.

APPENDIX TO THE REPORT OF THE MINISTER OF AGRICULTURE

REPORT

OF THE

DOMINION EXPERIMENTAL FARMS

FOR THE

FISCAL YEAR ENDING MARCH 31, 1920

PRINTED BY ORDER OF PARLIAMENT.

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1921

[No. 16—1921].

OTTAWA, March 31, 1920.

The Honourable
The Minister of Agriculture,
Ottawa.

SIR,—I have the honour to submit herewith, for your approval, the thirty-third annual report of the work carried on by the Experimental Farms Branch of the Department of Agriculture, during the year ending March 31, 1920.

This report is merely a summary of the year's operations but an endeavour has been made to prepare it in such a way that it will be found both readable and giving a very fair general idea of the lines of activity pursued.

I have the honour to be, sir,

Your obedient servant,

E. S. ARCHIBALD,
Director, Dominion Experimental Farms.

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ANNUAL REPORT OF THE EXPERIMENTAL FARMS

FOR THE YEAR ENDING MARCH 31, 1920

REPORT OF THE DIRECTOR

E. S. Archibald, B.A., B.S.A.

FIELD CROP AND LIVE STOCK NOTES FOR 1919

The season opened tardily and practically no seeding had been done in the Maritime Provinces and Quebec at the end of April. In Ontario very little had been done as heavy snowfalls during the last week of April had left the land too wet for tilling. In the western provinces, although the spring opened late, about 60 per cent of seeding was completed by May 1. At the end of June, the condition of the principal grain crops indicated that for the fourth successive year the yields of the Dominion would be below the average of the previous ten years.

In Manitoba and Ontario warm rains and generally favourable weather gave promise of a good harvest. In the Maritime Provinces and Quebec, the conditions also were generally favourable and the harvest was good.

The results of harvesting of grain crops in Alberta and Saskatchewan showed poor to very poor yields in the southern parts of those provinces, and poor to good in the northern districts.

The area sown to wheat was 19,125,968 acres, as compared with 17,353,902 in 1918. The total value of Canada's field crops for the year was $1,452,437,500, as compared with the total value of $1,367,909,970 in 1918.

The area under roots and fodder crops amounted to 12,554,974 acres, as compared with 12,321,351 acres in 1918. The total estimated yield of potatoes for 1919 was 125,574,900 bushels, being much greater than the yield of 1918.

In the following tables, details are given of the yields and values of the principal field crops for 1918 and 1919. In table 3 the numbers of the various classes of live stock in Canada are given for the period of 1915-1919.

TABLE I.—COMPARISON OF YIELDS AND PRICES OBTAINED FOR THE YEARS 1918 AND 1919

Crop	Average Yield per acre.		Average Price per bush.		Total Yield.	
	1918	1919	1918	1919	1918	1919
	bush.	bush.	$	$	bush.	bush.
Fall wheat	19·00	23·75	2 08	1 97	7,942,800	16,006,000
Spring wheat	10·75	9·50	2 02	1 88	181,132,550	177,254,400
All wheat	11·00	10·00	2 02	1 89	189,075,350	193,260,400
Oats	28·75	26·25	0 78	0 80	426,312,500	294,387,000
Barley	24·50	21·25	1 00	1 37	77,287,240	56,389,400
Rye	15·25	13·50	1 49	1 40	8,504,400	10,207,400
Peas	13·25	14·75	2 54	2 86	3,099,400	3,406,300
Beans	15·50	16·50	5 41	4 48	3,563,380	1,288,600
Buckwheat	20·75	23·50	1 58	1 50	11,375,500	10,550,800
Mixed grains	38·75	31·00	1 14	1 36	35,662,300	27,851,700
Flax	5·75	5·00	3 13	4 13	6,055,200	5,472,800
Corn for husking	56·75	64·20	1 75	1 30	14,214,200	16,940,500
Potatoes	142·00	153·50	0 98	0 95	104,364,200	125,574,900
Turnips, mangels, etc	377·50	354·00	0 43	0 50	122,699,600	112,288,600
	tons	tons	per ton	per ton	tons	tons
Hay and clover	1·40	1·55	16 25	20 72	14,772,300	16,348,000
Fodder corn	9·50	9·75	6 15	6 92	4,787,500	4,942,760
Sugar beets	10·00	9·80	10 25	10 86	180,000	240,000
Alfalfa	2·25	2·20	17 84	21 85	446,400	494,200

TABLE 2.—COMPARISON OF EASTERN CANADA, PRAIRIE PROVINCES AND BRITISH COLUMBIA AS TO YIELDS AND PRICES OBTAINED

Crop	Eastern Provinces				Prairie Provinces				British Columbia			
	Average Yield per acre		Average Price obtained		Average Yield per acre		Average Price obtained		Average Yield per acre		Average Price obtained	
	1918	1919	1918	1919	1918	1919	1918	1919	1918	1919	1918	1919
	bush.	bush.	$	$	bush.	bush.	$	$	bush.	bush.	$	$
Fall wheat	19·50	24·30	2 09	1 97	15·17	15·75	1 93	1 98	24·75	24·75	2 15	2 40
Spring wheat	20·21	16·37	2 16	2 18	10·18	9·31	2 28	1 86	22·00	22·00	2 08	2 31
Oats	37·58	28·75	0 84	0 97	23·73	24·92	0 71	0 68	39·75	47·25	1 00	1 07
Barley	33·74	23·21	1 26	1 41	20·95	20·31	0 90	1 35	26·50	33·00	1 47	1 82
Peas	12·89	14·61	2 57	2 85	19·38	16·31	1 50	3 07	21·50	23·00	3 00	2 60
Rye	16·11	16·20	1 66	1 59	15·01	12·67	1 43	1 31	30·00	22·50	2 07	2 08
Flax	11·99	9·58	3 51	3 67	5·53	4·90	3 11	4 15	.....	.....	.....	.....
Potatoes	144·49	151·12	1 02	0 97	123·43	160·88	0 80	0 85	228·00	170·00	0 97	1 00
Turnips, etc	399·33	368·09	0 48	0 44	219·28	230·95	0 66	1 02	422·00	365·00	0 60	0 75
	tons.	tons			tons	tons			tons	tons		
Hay and clover	1·43	1·57	16 19	20 70	0·97	1·21	14 14	18 60	1·90	1·50	33 25	35 25
Sugar beets	10·00	9·79	10 25	10 86	.....	.....	.....	.....	.....	.....	.....	.....
Fodder corn	9·73	9·71	6 01	6 60	5·57	8·32	10 50	12 89	10·10	11·50	10 00	12 00
Alfalfa	2·28	2·18	15 63	19 15	1·91	1·90	20 49	27 69	3·25	3·00	32 25	37 00

TABLE 3.—FARM AND LIVE STOCK, 1915-1919

Live Stock	1915	1916	1917	1918	1919
Eastern Provinces—					
Horses	1,442,063	1,396,766	1,434,832	1,399,099	1,365,464
Milch cows	2,075,750	1,998,318	2,270,837	2,585,285	2,558,313
Other cattle	1,848,504	1,727,773	2,103,329	3,501,640	3,535,082
Sheep	1,569,488	1,483,065	1,840,054	2,404,319	2,698,394
Swine	2,269,029	2,096,832	2,102,506	2,842,507	2,855,343
Western Provinces—					
Horses	1,492,681	1,800,270	1,922,793	2,166,027	2,258,188
Milch cows	553,152	792,797	882,441	907,350	938,530
Other cattle	1,450,212	1,929,844	2,423,990	2,810,462	2,806,848
Sheep	420,770	493,607	485,446	603,138	678,579
Swine	804,328	1,340,179	1,479,188	1,407,370	1,139,767
British Columbia—					
Horses	61,355	61,312	55,124	44,131	43,717
Milch cows	37,944	39,318	49,005	50,965	51,594
Other cattle	100,439	103,101	191,338	195,165	194,644
Sheep	46,404	46,269	43,858	45,291	44,985
Swine	38,543	37,829	37,688	39,805	44,960

TABLE OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA, FROM APRIL 1, 1919, TO MARCH 31, 1920; GIVING MAXIMUM, MINIMUM, AND MEAN TEMPERATURE FOR EACH MONTH WITH DATE OF OCCURRENCE, ALSO THE RAINFALL, SNOWFALL, AND TOTAL PRECIPITATION

Months	Maximum	Minimum	Range	Mean	Highest	Date	Lowest	Date	Rainfall	Snowfall	Total Precipitation	Number of days Precipitation	Heaviest in 24 hours	Date
	°	°	°	°	°		°		In.	In.	In.		In.	
April	47·36	30·00	17·36	38·68	69·0	23	3·0	1	2·83	4·50	3·28	15	0·50	16
May	65·13	45·49	19·64	55·31	84·0	29	32·0	6	3·77	.....	3·77	18	0·82	21
June	82·68	59·56	23·11	71·11	96·0	3	44·0	28	2·36	.....	2·36	8	0·82	26
July	84·50	59·43	25·07	71·96	99·0	4	50·0	8	1·59	.....	1·59	9	0·34	10
August	77·28	55·78	21·50	66·53	91·6	7	41·9	9	1·41	.....	1·41	14	0·32	21
September	68·97	48·28	20·68	58·62	83·8	21	35·0	27	2·48	.....	2·48	16	0·57	9
October	54·10	37·34	16·75	45·71	75·0	10	25·0	8	4·91	.....	4·91	17	1·81	31
November	37·47	25·14	12·32	31·30	58·0	11	4·4	28	2·19	5·25	2·71	17	0·53	5
December	23·14	5·67	17·46	14·40	44·0	13	−16·6	18	0·12	9·25	1·04	14	0·32	24
January	11·89	−8·13	20·02	1·88	33·8	8	−29·0	19	.....	39·00	2·99	12	0·90	17
February	22·21	3·01	19·19	12·60	33·0	7	−25·0	1	.....	22·00	2·20	11	0·80	15
March	37·75	18·97	18·78	28·36	63·6	24	−16·4	2	1·42	9·75	2·39	15	0·55	5
									23·08	80·75	31·13	166		

Rain or snow fell on 166 days during the 12 months.
Heaviest rainfall in 24 hours, 1·81 inches on October 31.
Heaviest snowfall in 24 hours, 9·00 inches on January 17.
The highest temperature during the 12 months was 99°·0 on July 4.
The lowest temperature during the 12 months was −29°·0 on January 19.
During the growing senson rain fell on 15 days in April, 18 days in May, 8 days in June, 9 days in July, 14 days in August, and 16 days in September.
June shows the lowest number of days with precipitation, viz. 8.
Total precipitation during the 12 months 31·13 inches, as compared with 37·94 inches during 1918-19.

RAINFALL, SNOWFALL, AND TOTAL PRECIPITATION FROM 1890 TO 1919-20, ALSO THE AVERAGE ANNUAL AMOUNT THAT HAS FALLEN

Years	Rainfall	Snowfall	Total Precipitation
1890	24·73	64·85	31·22
1891	30·19	73·50	37·54
1892	23·78	105·00	34·28
1893	31·79	72·50	39·04
1894	23·05	71·50	30·20
1895	27·01	87·50	35·76
1896	21·53	99·75	31·50
1897	24·18	89·00	33·08
1898	24·75	112·25	35·97
1899	33·86	77·25	41·63
1900	29·48	108·00	40·72
1901	29·21	97·25	38·91
1902	25·94	101·75	36·10
1903	26·43	85·00	34·92
1904	25·95	108·75	36·79
1905	23·71	87·25	32·42
1906—January 1, to March 31	1·90	24·50	4·34
1906–07	21·73	72·50	28·94
1907–08	24·70	134·75	38·18
1908–09	22·13	107·90	32·91
1909–10	28·40	61·25	34·51
1910–11	18·94	88·25	27·72
1911–12	20·12	98·50	29·95
1912–13	32·54	106·50	43·18
1913–14	21·51	70·25	28·51
1914–15	16·77	78·50	24·67
1915–16	22·66	130·00	35·65
1916–17	24·84	126·50	37·18
1917–18	20·90	116·00	32·48
1918–19	29·23	87·25	37·94
1919–20	23·08	80·75	31·13
Total for 30 years and 3 months	755·04	2,824·50	1,037·37
Average for 30 years	25·16	94·15	34·57

RECORD OF SUNSHINE AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA, FROM APRIL 1, 1919, TO MARCH 31, 1920

Months	Number of days with Sunshine	Number of days without Sunshine	Total hours Sunshine	Average Sunshine per day
April	21	9	156·0	5·20
May	27	4	210·3	6·78
June	29	1	303·5	10·11
July	30	1	321·5	10·37
August	29	2	210·9	6·80
September	29	1	181·5	6·05
October	23	8	125·8	4·05
November	21	9	49·7	1·65
December	23	8	103·2	3·32
January	23	8	111·2	3·58
February	24	5	131·3	4·52
March	29	2	160·9	5·19

(Signed) WILLIAM T. ELLIS,
Observer.

DISTRIBUTION OF SAMPLES

The distribution of samples of seed grain, potatoes, flower-seeds, fruit trees and shrubs was again carried on during the past winter from the Central Farm at Ottawa and from the various branch Farms and Stations. The distribution of seed grain was made from Ottawa and of seed grain and potatoes from the branch Farms and Stations.

EXPERIMENTS AT FORT VERMILION, ALTA.

CHARACTER OF SEASON

A number of snowstorms occurred in April and cold weather continued until late in the month. Wheat was sown on April 28. May was moderately cold. June was cold up to the 11th, on which date was experienced the last spring frost. Frost on June 3 killed back some of the more tender varieties of vegetables and flowers. After June 11 the weather became warm and remained so during the balance of the growing season. Abundance of rain fell and crops made rapid growth. The first wheat was cut on August 16 and the last plot was cut on September 6. Marquis and Red Fife wheats, which had not been cut until after a severe frost on September 3, showed the effects of this frost. Due to showery weather at the end of August and the beginning of September great difficulty was experienced in getting the grain threshed. October was very unfavourable for fall work and only a small amount of ploughing was done. On the 26th the temperature went as low as 22 degrees below zero. November was quite cold with considerable snow.

CEREALS

Seven varieties of spring wheat were tested. The length of straw varied from 49 to 61 inches. Huron gave the highest yield of 57 bushels per acre and Ruby the lowest, 48 bushels. Seven varieties of oats were grown. Garton's Regenerated Abundance gave 62 bushels 32 pounds, Banner 54 bushels 24 pounds and Liberty (hulless) 30 bushels per acre. Of the five varieties of barley tested the highest yield was obtained from Manchurian, a six-rowed sort, which gave 62 bushels and 24 pounds. Canadian Thorpe, a two-rowed sort, gave a yield of 52 bushels 24 pounds. Yields of flax seed were small due to the setback which the plants received by the frost on June 3. The yield of hemp was large due to abundance of rain during the growing season. Buckwheat gave practically no yield of seed on account of the damage received by severe frost on September 3. Spring frosts, difficulty in threshing and mice caused losses in yields of field peas. Arthur gave 34 bushels and Prussian Blue 32 bushels per acre. Spring rye yielded at the rate of 50 bushels 20 pounds and winter rye 54 bushels and 36 pounds per acre.

FORAGE CROPS

Due to the abundance of rain alfalfa and clovers made rank growth. Excellent yields were recorded from variegated and common alfalfa and from red and alsike clover. Considerable difficulty was caused by rains in the harvesting of clovers and alfalfa. Red Top and Orchard grass were both killed in the winter of 1918-19. All other grasses made good growth this season, but due to heavy rains the hay was of inferior quality. Seed of fair quality was gathered from the plot of timothy. The following are some of the yields per acre recorded: Alfalfa variegated, first cutting, 3 tons, 450 pounds, second cutting, 1 ton, 1,450 pounds; alfalfa common, first cutting, 3 tons, 600 pounds, second cutting, 1 ton, 700 pounds; red clover, 2 tons, 1,550 pounds; alsike, 3 tons, 150 pounds; awnless brome grass, 3 tons, 950 pounds; western rye grass, 4 tons, 550 pounds; timothy, 2 tons, 1,100 pounds; meadow fescue, 3 tons, 500 pounds. Canary seed grass gave a yield of 5 tons, 800 pounds of very rough hay. The plot of rape made the usual good growth.

Germination of root seed was slow due to coldness of land in May. Growth was slow until past the middle of June when the weather warmed up. During the balance of the season roots made favourable growth and when harvested were of a fair size and

yields were quite satisfactory. Some of the largest yields of roots per acre were obtained with the following varieties:—

Mangels.—Giant Yellow Intermediate, 19 tons, 100 pounds; Giant Yellow Globe, 19 tons, 400 pounds; Selected Yellow Globe, 18 tons 1,380 pounds.

Carrots.—Chantenay, 20 tons, 200 pounds; Half Long Chantenay, 18 tons, 1,900 pounds; White Belgian, 18 tons, 600 pounds.

Swede Turnips.—White Globe, 25 tons, 1,600 pounds; Good Luck, 22 tons, 1,570 pounds; Perfection Swede, 21 tons, 600 pounds.

Sugar Beets.—Wohanka (British Columbia grown seed) 14 tons, 1,580 pounds; Waterloo (Chatham grown seed), 13 tons, 100 pounds.

Heavy frost on June 3 cut all the millet plants down to the ground and as the nights following were cold with more frosts, the plants were almost completely killed and no yields were obtained.

The corn also suffered greatly from this frost on June 3. Some of the highest yields obtained per acre are as follows: White Sweet Squaw, 14 tons, 1,040 pounds; Extra Early Cory, 13 tons, 1,900 pounds; Yellow Field, 13 tons, 400 pounds; Mixture of field varieties, 13 tons, 1,960 pounds.

HORTICULTURE

The season of 1919 was quite favourable for horticultural work. Heavy frost on June 3 killed some more tender varieties of vegetables and flowers. Abundance of moisture fell in the growing season and all vegetables made rapid growth and when harvested in most cases quite lafge yields were recorded. Potatoes were a very heavy crop. Twenty-three different vegetable crops and several varieties of each crop were grown. The annual flower garden was well up to the average but a little later than usual coming into bloom, due to unfavourable weather conditions. Through the latter part of July and August and well into September the showing was unusually fine. The asters are especially worthy of mention. The sweet peas although a little late gave a fine display of bloom which lasted up to the severe frost on September 28. The rose bushes succeeded very well. They gave a very creditable amount of bloom during the past season and were still in bloom when cut down by frost on September 28. Perennial flowers came into bloom much earlier than any of the annuals and produced an abundance of bloom throughout the past season.

TABLE OF METEOROLOGICAL OBSERVATIONS TAKEN AT FORT VERMILION, PEACE RIVER DISTRICT, ALBERTA, FROM APRIL 1, 1919, TO MARCH 31, 1920, SHOWING MAXIMUM, MINIMUM, AND MEAN TEMPERATURE, THE HIGHEST AND LOWEST FOR EACH MONTH WITH DATE OF OCCURRENCE, ALSO RAINFALL, SNOWFALL, AND TOTAL PRECIPITATION

Months	Maximum	Minimum	Range	Mean	Highest	Date	Lowest	Date	Rainfall	Snowfall	Total Precipitation	Number of days Precipitation	Heaviest in 24 hours	Date
	°	°	°	°	°		°		In.	In.	In.		In.	
April	49·63	18·63	31·00	34·13	69·9	27	10·2	22	0·69	3·00	0·99	2	0·69	20
May	57·82	27·89	29·93	42·85	76·0	19	13·5	5	0·74	3·25	1·06	7	0·39	29
June	63·44	36·26	27·18	49·81	89·2	15	20·0	1	6·76	.....	6·76	11	1·30	6
July	73·06	44·23	28·82	58·64	89·0	16	34·0	3	1·92	.....	1·92	9	0·63	6
August	70·77	41·98	28·79	56·37	82·5	13	28·5	25 &31	2·79	.....	2·79	13	1·74	5
September	63·93	28·93	35·00	46·43	82·0	18	14·0	28	0·81	.....	0·81	3	0·56	25
October	32·51	4·77	27·73	18·63	58·9	4	−22·0	26	0·62	5·00	1·26	7	0·40	7
November	13·55	−13·89	27·44	−0·17	42·0	21	−46·9	30	.....	5·25	0·52	3	0·40	9
December	4·32	−22·36	26·65	−9 04	49·0	19	−50·0	15	.....	1·75	0·17	2	0·12	16
January	−3·80	−31·77	27·97	−17·79	26·0	6	−58·9	24	.....	2·50	0·25	1	0·25	15
February	23·46	−11·20	34·66	6·13	46·0	18	−41·0	2	.....	1·50	0·15	3	0·05	9
March	23·50	−12·89	36·40	5·31	42·5	13	−47·0	2	.....	1·50	0·15	3	0·05	20
									14·33	24·75	16·83	64		

SESSIONAL PAPER No. 16

SOME WEATHER OBSERVATIONS TAKEN AT CENTRAL EXPERIMENTAL FARM, OTTAWA, AS COMPARED WITH THOSE TAKEN AT FORT VERMILION, PEACE RIVER DISTRICT, ALBERTA.

	Mean Temperature	Highest Temperature	Lowest temperature	Total Precipitation	Heaviest in 24 hours	Total hours Sunshine	Average Sunshine per day
	°	°	°	In.	In.	Hr.	Hr.
April							
Ottawa	38·68	69·0	3·0	3·28	0·50	156·0	5·20
Fort Vermilion	34·13	69·9	10·2	0·99	0·69	186·9	6·23
May							
Ottawa	55·31	84·0	32·0	3·77	0·82	210·3	6·78
Fort Vermilion	42·85	76·0	13·5	1·06	0·39	174·2	5·61
June							
Ottawa	71·11	96·0	44·0	2·36	0·82	303·5	10·11
Fort Vermilion	49·85	89·2	20·0	6·76	1·30	206·9	6·89
July							
Ottawa	71·96	99·0	50·0	1·59	0·34	321·5	10·37
Fort Vermilion	58·64	89·0	34·0	1·92	0·63	279·8	9·02
August							
Ottawa	66·53	91·6	41·9	1·41	0·32	210·9	6·80
Fort Vermilion	56·37	82·5	28·5	2·79	1·74	255·0	8·22
September							
Ottawa	58·62	83·8	35·0	2·48	0·57	181·5	6·05
Fort Vermilion	46·43	82·0	14·0	0·81	0·56	225·6	7·52
October							
Ottawa	45·71	75·0	25·0	4·91	1·81	125·8	4·05
Fort Vermilion	18·63	58·9	−22·0	1·26	0·40	97·3	3·13
November							
Ottawa	31·30	58·0	4·4	2·71	0·53	49·7	1·65
Fort Vermilion	−0·17	42·0	−46·9	0·52	0·40	73·9	2·46
December							
Ottawa	14·40	44·0	−16·6	1·04	0·32	103·2	3·32
Fort Vermilion	−9·04	49·0	−50·0	0·17	0·12	59·4	1·91
January							
Ottawa	1·88	33·8	−29·0	2·99	0·90	111·2	3·58
Fort Vermilion	−17·79	26·0	−58·9	0·25	0·25	84·3	2·71
February							
Ottawa	12·60	33·0	−25·0	2·20	0·80	131·3	4·52
Fort Vermilion	6·13	46·0	−41·0	0·15	0·05	121·6	4·19
March							
Ottawa	28·36	63·6	−16·4	2·39	0·55	160·9	5·19
Fort Vermilion	5·31	42·5	−47·0	0·15	0·05	166·0	5·35

RECORD OF SUNSHINE AT FORT VERMILION, PEACE RIVER DISTRICT, ALBERTA, FROM APRIL 1, 1919, TO MARCH 31, 1920.

Months	Number of days with sunshine	Number of days without sunshine	Total hours sunshine	Average sunshine per day
April	27	3	186·9	6·23
May	23	8	174·2	5·61
June	21	9	206·9	6·89
July	28	3	279·8	9·02
August	29	2	255·0	8·22
September	28	2	225·6	7·52
October	19	12	97·3	3·13
November	18	12	73·9	2·46
December	21	10	59·4	1·91
January	22	9	84·3	2·71
February	25	4	121·6	4·19
March	25	6	166·0	5·35

EXPERIMENTS AT GROUARD, ALTA.

Character of the season.—The fall of 1918 was exceedingly dry, preventing satisfactory ploughing. For this reason it was decided to sow in land previously in potatoes, which proved a success. In the spring, the weather was cold for a long time, causing a delay of at least fifteen days in the season. The cold weather was followed by incessant rains and very little warm weather, which retarded maturity.

Cereals.—Four varieties of spring wheat were tested. Prelude, Huron and Marquis yielded, respectively, 32, 46 and 51 bushels per acre. Ruby, a new variety, seemingly the best suited to the region, yielded 49 bushels per acre.

The barley test gave the following results: O.A.C. No. 21, 71⅔ bushels per acre; inclined to lodge. Duckbill, 70 bushels; stiff straw. Albert, 52 bushels; early; inclined to lodge.

A comparison of three varieties of oats showed that, although not the earliest, Victory, with a yield of 148 bushels per acre, is more advantageous than Banner or Daubeuey, with 145 and 98 bushels per acre respectively.

One-half pound of fall rye seed, not completely dry, was sown in October, 1918, and yielded 33 pounds.

Horticulture.—Many farmers expecting a long fall were deceived and a large quantity of potatoes and vegetables were left in the ground and grain in stook owing to the sudden setting in of winter.

Although better success has been obtained in the past, our garden crops have been, as usual, remarkable. Cabbage, cauliflower, Brussels sprouts, celery, kohl rabi and tomatoes, sown in hotbeds, all gave good crops except tomatoes, which had to be used green. Of the vegetables sown directly in the open, beans were either frozen or failed to ripen, cucumbers were a failure, and salsify unsatisfactory. Beets, carrots, turnips, onions, parsley, parsnip, peas, radish and spinach gave excellent crops. Pumpkins and squash weighing 10 to 12 pounds were obtained, and also a few citrons, one weighing 1 pound. Squaw corn proved hardier and earlier than Early Sweet Malcolm and gave several ripe well filled ears, but the season generally was unfavourable. Turnips were injured by rust.

All the old varieties of fruit trees, single and improved Siberian apple trees have perished or are dying, and there is no chance of saving them.

Currants, young and old, continue to give fine results. It is one of the best fruits for the region, as it always succeeds when pruned and sprayed with Paris green.

Purple and white lilacs are always in good condition, they are easily multiplied and highly decorative.

EXPERIMENTS AT BEAVERLODGE, ALTA.

Early disappearance of snow in the spring of 1919 was followed by a prolonged period of cold, dry, windy weather with some hard frosts during May and June. New meadows made very slow growth and old meadows were almost failures. Insufficient moisture, amounting to only 4·16 inches from the first of May to the middle of July, retarded the growth of all crops. Wheat plots were seeded April 17 under favourable conditions but the weather following was not conducive to high yields. Rain fell in abundance in the latter part of the growing season and although the lowering of the temperature to 29·5 degrees Fahr. on the morning of September 1 affected the grade of wheat and the germination of oats, the yields of the late-maturing varieties were good. The first hard killing frost occurred on September 27.

Six varieties of spring wheat were grown. Huron gave the highest yield of 46 bushels and 17 pounds. Marquis was second in yield, with 46 bushels and 15 pounds per acre. Ruby yielded well, but considerable loss resulted from shelling by the wind. Grande Prairie district as a whole is better suited for the production of oats than wheat or barley. Of the six varieties of oats tested this year Banner yielded 132 bushels 32 pounds, Victory 119 bushels 24 pounds and Liberty (hulless) 72 bushels 2 pounds. The last variety is very well suited to this district on account of its earliness, strength of straw and good yielding qualities. O.A.C. No. 21 barley gave the highest yield of the varieties of barley tested. The two-rowed Early Chevalier excels the six-rowed sorts in its ability to withstand the heavy winds. O.A.C. No. 21 yielded per acre 55 bushels 40 pounds, Guymalaye, a hulless variety, gave 49 bushels 8 pounds per acre. Other varieties tested gave smaller yields. The average yield of three plots of peas was 23 bushels 23 pounds per acre. Winter rye gave a yield per acre of 43 bushels 22 pounds and Turkey Red winter wheat produced 36 bushels per acre.

The following experiments were conducted with forage crops in the past season. The nurse crop experiment; grass and clover mixture experiment; special alfalfa experiments; tests with field roots, annual hay, pasture and ensilage crops; inoculation tests with legumes; thickness of seeding tests with timothy and western rye grass; grasses and clovers for seed production; three years' stand of timothy and western rye grass. Combining the sowings of 1918 and 1919, over five hundred plots of forage crops are under test at Beaverlodge. Special effort is being made to ascertain what grasses and clovers will succeed here. Of ten hay crops tried, western rye grass and timothy appear to be the most suitable, with sweet clover holding some promise for the provision of midsummer pasture. A mixture of red and alsike clovers seems to be the most likely clover basis for mixed seedings with a view to hay production. It appears at present that the most satisfactory rotation may prove to be the one in which hay crops are seeded during the latter half of May with a thin-sown crop of either barley or oats for green feed. Results from root crops have not been very encouraging. Turnips are the safest of these crops. Millet is not sufficiently hardy to be dependable. Corn for fodder is not hopeful but sunflowers promise to be hardy and productive. On frosty areas the production of rye grass and timothy seed promises to be a safe and more profitable line of production than the raising of grain. Red clover and alsike ripened seed on several occasions but no alfalfa seed has been produced.

A date-of-seeding experiment commenced in 1918 was continued this year with wheat, oats, barley, flax and peas and considerable valuable data were collected.

No season for six years has been as unfavourable for vegetable gardening as the season of 1919. Cold dry weather until midsummer, frosts, lashing winds and insects destroyed many vegetable plots. Potatoes, however, made a first-class stand and peas where not planted too shallow produced good rows and during the latter part of the summer bore long and abundantly. Everything that got a good start attained a fine development in the end, but so many seedings were destroyed or made a late weak start that the rows of winter vegetables were nearly all ragged and thin and a majority of the specimens small. The freeze-up commencing October 8 destroyed many potatoes and other vegetables in the ground or seriously affected their eating and keeping qualities. The highest yielding varieties of potatoes produced at the following rates per acre: American Wonder, 484 bushels 30 pounds; Early Northern, 476 bushels; Gold Coin, 408 bushels. Several cultural tests are being conducted with potatoes, with fairly good results. A considerable number of flowers can be grown successfully in this district. Of the perennial flowers, pansies, larkspurs, Iceland and California poppies gave good results. Sweet peas, nasturtiums, climbing nasturtiums, marigolds, linaria and asters also produced a fine display of bloom. Chinese lilacs, Caragana, Manitoba maple, wild honeysuckle and two varieties of spiræa are proving fairly hardy. Several varieties of black, red and white currants gave excellent yields in the past season. The outlook for currants, raspberries, strawberries and gooseberries is very hopeful. The apples planted out are nearly all alive but the trees killed back badly in the winter of 1918-19.

TABLE OF METEOROLOGICAL OBSERVATIONS TAKEN AT BEAVERLODGE, GRANDE PRAIRIE, ALBERTA, FROM APRIL 1, 1919, TO MARCH 31, 1920, GIVING THE MAXIMUM, MINIMUM, AND MEAN TEMPERATURE FOR EACH MONTH, ALSO RAINFALL, SNOWFALL, AND TOTAL PRECIPITATION.

Months	Maximum	Minimum	Range	Mean	Highest	Date	Lowest	Date	Rainfall	Snowfall	Total Precipitation	Number of days Precipitation	Heaviest in 24 hours	Date
	°	°	°	°	°		°		In.		In.		In.	
April	51·36	30·23	21·13	40·79	70·0	26	24·0	22	0·42	4·00	0·82	3	0·40	4
May	56·62	33·40	23·20	45·01	75·0	18	17·5	5	1·04	.....	1·04	5	0·87	30
June	62·46	39·63	22·83	51·04	83·0	19	24·0	1	2·48	.....	2·48	11	0·67	5
July	70·58	45·96	24·61	58·26	86·0	15	40·0	1 & 9	2·22	.....	2·22	13	0·67	19
August	67·12	45·67	21·45	56·39	77·0	16 & 17	31·0	5	2·14	.....	2·14	9	0·60	21
September	61·56	39·65	21·92	50·61	75·0	16 & 17	23·0	27 & 28	1·78	.....	1·78	4	0·96	6
October	38·80	18·41	20·38	28·60	63·0	4	−10·0	30	0·18	15·50	1·73	9	0·68	21
November	20·96	4·91	16·05	12·93	47·0	16 & 18	−24·0	30	0·14	22·00	2·34	10	0·40	9
December	20·83	4·45	16·38	12·64	45·0	18 & 28	−35·0	1	0·03	17·50	1·78	8	0·70	16
January	10·90	−5·96	16·87	2·47	42·0	7	−47·0	22	.....	38·50	3·85	10	1·10	28
February	33·03	13·68	19·34	23·35	45·0	17	−12·0	2	.....	2·00	0·20	1	0·20	19
March	28·61	9·22	19·45	18·94	47·0	19	−22·0	3	.....	21·20	2·12	10	0·40	22
									10·43	120·70	22·50	93		

EXPERIMENTS AT FORTS SMITH, RESOLUTION AND PROVIDENCE, NORTHWEST TERRITORIES

FORT SMITH

The season was exceptionally favourable due to the absence of the usual June, July and August frosts. All crops gave uncommon yields, and carrots weighing 1 to 1½ pounds each and cabbage 20 pounds each were obtained. Onions were 3 to 4 inches in diameter. The Prizetaker variety proved superior to Yellow Globe and Red Danvers.

The average return of potatoes was 20 bushels for 1 bushel planted. Red varieties succeeded better than white. At 20 miles from Forth Smith we have 14 acres of good land for oats, wheat and barley. From 800 pounds of oats sown, we obtained 12,000 pounds. Wheat and barley matured but were destroyed by birds.

FORT RESOLUTION

In general, the crop this year was the best ever obtained. Snow and rain hindered ploughing operations in May, and plants which germinated early in June suffered from drought and caterpillars. July and August were warm and wet, favouring the crops.

Potatoes gave the best crop ever recorded, the total yield being 650 bags, an average return of 9 for 1. Tubers were all large, some weighing 2¼ pounds. In the old fields, a superficial scab was noticed on the tubers, which, however, did not affect their edible quality. A certain number of plants suffered from a disease which may have been of a fungous origin. At the outset the plants took on a bluish hue as that of a light mould, and quickly perished. The diseased plants were unproductive. As usual, Early Rose proved the best variety. Experiments conducted during the last six years show that Wicks Extra Early, Rochester Rose, and Beaves Rose are unsuited to this region. The best result was obtained with a mixture of two white varieties, one probably being Wee McGregor, which yielded 30 for 1.

Cabbage did not succeed as well as usual owing to drought and insects, but the crop was satisfactory.

Turnips gave an excellent yield which would be hard to surpass for some varieties. Purple Top Milan was easily the best, the average weight being 10 pounds and one specimen tipping the scales at 22½ pounds. The crop was free from disease or insects this year, although no preventive treatment was applied.

The beet crop was the best ever obtained and all other vegetable crops were splendid.

An attempt to produce our own cabbage, turnip, carrot and beet seed proved a failure as the seeds did not ripen, the season being too short and wet.

Barley was the only cereal sown. Inferior home-grown seed failed to germinate satisfactorily. Seed from Fort Smith was sown June 6. The crop was injured by frost in September and used as green feed.

Hay was abundant, owing to the wet season. Rye grass and timothy, grown on a small scale, proved satisfactory. Clover sown June 7 gave a vigorous growth and a good crop is expected for next year.

For the first time in seven years, our apple trees have blossomed, but the fruits were only the size of a small wild cherry in September. Apparently, these apple trees will never be more than an ornament. Tomatoes grown by the nuns of the Indian School were the size of an egg and proved of good quality when ripened in the house.

FORT PROVIDENCE

The season was most favourable for vegetables and hay. Potatoes, our principal crop, gave an excellent yield: 107 bags were planted about May 17 and in September, 1,687 bags containing two bushels each were harvested, after providing for the needs of the institution since August 10. Carrots, turnips, beets, cabbage, cauliflower, peas, lettuce and radish gave good crops. Onions, radish and cabbage suffered from worms.

Three bushels of barley, sown May 14, yielded 8 bushels, frost having injured the crop on June 1. The same frost completely destroyed the oats and injured the wheat, which yielded 4 bushels from 1 bushel sown.

On May 24 we sowed 1 pound of couch grass, ½ pound of clover and 1 pound of rye in new land. Growth was excellent, especially that of clover. The crop was used as cow pasture in September.

Locusts were plentiful but fortunately they respected our crops. Large black caterpillars despoiled trees of their foliage for miles along the river.

DIVISION OF ANIMAL HUSBANDRY

REPORT OF THE ACTING DOMINION ANIMAL HUSBANDMAN, G. B. ROTHWELL, B.S.A.

During the past year live stock work at the Central Farm has been successful with certain exceptions. In explanation of the comparatively small amount of experimental work done as compared with other years it may be stated that the season in so far as crops were concerned was a poor one. Further, the high cost of all foodstuffs and the difficulty of procuring certain feeds at any price made many contemplated lines of experimental work impossible. However, the most serious of all drawbacks was due to the fact that very heavy reactions to the tuberculin test in the dairy herd not only caused the discontinuance of experimental work, but also was responsible for a deficit in the general operations.

There are now 662 head of live stock in the stables, as follows: 146 dairy cattle, 36 horses, 175 sheep, 305 swine.

Shortage of pasture and range generally has made itself felt in two lines of work in particular, viz., sheep and swine raising. With the former, while a really excellent crop of lambs was raised, insufficient pasture was responsible for rather unsatisfactory development at the end of the season. With hogs, possibly due to the effort of this department to increase production to the limit and to consequent overcrowding, a rather serious infestation of internal parasites resulted. However, it would seem probable that greater range facilities would be available for sheep next season, and in the case of swine, reduction of the herd to normal size, together with careful treatment of all hogs for various forms of intestinal parasites, would render conditions for satisfactory work in the future better than ever before.

HORSES

The quality of the horses on this Farm has steadily improved and the stables in general present a most creditable line up. There are at present 36 horses and colts, including three drivers and 4 general-purpose or express horses. Among the Clydesdales are several registered mares of the highest quality and two promising home-bred stallions, two and three years old.

Breeding operations, while not extensive, were very successful, four good foals being raised. Prophylactic use of the vaccine treatment against joint-ill proved entirely successful. The purchase of two well known show mares, both in foal, added materially to the increase in value of the horses, which amounts to $5,665. During the year 8,014½ days of horse labour were accounted for. Valuing horse labour at $1 per day amounts to $8,014.50, which covered even the unprecedented cost of horse maintenance during the winter of 1919-20.

Entries of horses were made at both the Eastern and Western Winter Fairs at Ottawa and Guelph, with most creditable results indeed. The most encouraging winnings were those of the breeding classes, where Central Experimental Farm entries topped the classes.

DAIRY CATTLE

The former representation of dairy herds is still maintained but the herds are in some cases somewhat reduced in numbers. They are as follows: Ayrshires, 48 head; French Canadians, 8 head; Holsteins, 66 head; Jerseys, 13 head; Grade Ayrshires, 5 head; Grade Holsteins, 6 head. The total of 146 head is 49 less than were on hand at the close of the preceding fiscal year. Apart from a number of

unfortunate losses during the year, the health of the herd has been all that could be desired, and production has in nearly all cases exceeded that of previous years. The replacing of some of the losses in live stock has caused a debit balance to be shown for the year.

Dairy Cattle Experiments.—Owing to some changes made in the management of the dairy herd it was not found possible to carry on as much experimental work as usual. However, the following work is to be noted:—

The study of several compounded dairy meals, which were being put on the markets and being largely advertised and sold during the period when meals were exceedingly scarce was completed. These were compared with a well-balanced home-mixed ration. The results go to show that while the ready-mixed rations and home-mixed rations were about equal for milk production, the home-mixed ration is almost invariably the most profitable as it can be procured for about two-thirds of the price of the others.

Data on the cost of rearing have again been carefully kept for all classes and ages of young stock. These figures show the desirability and economy of each farmer raising his own dairy animals and of raising them well.

The continued study and observations on the practical efficiency of various types of milking machines are making satisfactory progress.

The study of contagious abortion in cattle as reported in last year's report has been continued. This work consisted of trials of four different types of preventatives as follows:—

1st.—Lederle Killed Culture for pregnant animals, given in three progressive doses. Three animals treated. Results—two calved normally and third slightly premature, but not typical abortion. Treatment apparently effective.

2nd.—Lederle Live Culture for non-pregnant animals, one dose only. Twenty animals treated. Ten animals available for observation. Results—nine calved normally, tenth aborted upon being shipped to another herd. Treatment apparently effective.

3rd.—Mulford's Serrovaccine, live culture, for non-pregnant cows. One dose only. Ten animals treated. Six available for observation. Five calved normally, one aborted. One cow which calved normally was given treatment after service which theoretically should have caused abortion. This gives a negative appearance to the results of this test.

4th.—Health of Animals Branch, vaccine treatment. Double doses for non-pregnant cows. Eleven cows treated. Five available for observation. Four calved normally, the fifth aborted having aborted also the previous year. Treatment only partially effective.

Dairy Cattle Returns—The following table shows the average production of the 67 cows which completed a lactation period during the year. The table also shows the production of the five best and the production of the total herd of each breed of cattle. The figures are very gratifying showing as they do uniformly high production and profits throughout, the French Canadians being the only breed to fall below the average of the preceding year:

AVERAGES

Number of Head.	Breed	Age	Average days in milk	Average lbs. milk produced	Average per cent fat in milk	Average profit over cost of feed between calvings. Labour, manure and calf, not included
		Years	Days	lb.	%	$ cts.
67	All breeds and ages.	5	311	8,153·07	3·93	91 66
5 best	Ayrshire	7	349	10,276·50	3·89	114 87
20 total herd	Ayrshire	6	309	7,280·80	3·96	76 93
5 best	French Canadian	4	285	6,466·00	4·6	90 05
7 total herd	French Canadian	4	279	5,817·50	4·48	76 11
5 best	Holsteins	6	313	14,531·30	3·52	149 02
19 total herd	Holsteins	6	328	9,946·70	3·58	98 48
5 best	Jerseys	5	328	7,653·60	5·33	129 84
10 total herd	Jerseys	5	290	6,353·10	5·17	102 69
4 best	Gr. Ayrshire	6	314	7,366·50	3·86	83 86
4 total herd	Gr. Ayrshire	6	314	7,366·50	3·86	83 86
5 best	Gr. Holstein	6	333	11,826·00	3·61	126 35
7 total herd	Gr. Holstein	6	325	11,133·20	3·51	114 35

Official Records.—This year again a number of the cows and heifers of the various breeds were entered for official records. These, under very ordinary conditions for test work, made the following records in the respective tests:—

CANADIAN RECORD OF PERFORMANCE TESTS ON CENTRAL FARM, APRIL 1, 1919, TO MARCH 31, 1920.

Name and Number of Cow	Breed	Age at commencement of test	No. days milking	Pounds Milk produced	Pounds fat produced	Average per cent fat
		Years				
Canaan Beauty 2nd 21172	Holstein	6	334	18,072	603	3·34
Helena Keyes Posch 21376	Holstein	6	350	20,205	655	3·24
Ottawa March Ormsby 36769	Holstein	3	278	10,017	347	3·47
Ottawa Pietartje Ormsby 44451	Holstein	2	333	10,291	422	4·10
Topsy Keyes 15669	Holstein	9	285	10,907	381	3·50
Balmangan Queen 2nd 48431	Ayrshire	6	278	9,762	389	3·98
Duchess of Briarcrest 50109	Ayrshire	4	352	11,735	507	4·32
Flavia 7th of Ottawa 52310 (app.)	Ayrshire	2	248	6,661	279	4·19
Ottawa Kate 29601	Ayrshire	12	323	10,511	416	3·95
Denise Fortune 3807	Fr. Canadian	3	344	10,133	471	4·65
Nevas Princess 8065	Jersey	3	354	8,151	437	5·36

HOLSTEIN RECORD OF MERIT TESTS ON CENTRAL FARM, APRIL 1, 1919, TO MARCH 31, 1920.

Name and number of cow	Age at commencement of test			Number days on test	Pounds milk	Pounds fat	Pounds 80% Butter
	Years	Months	Days				
Butter Boy Keyes 2nd Lass 19686	7	11	6	7	541·5	20·13	25·17
Butter Boy Keyes 2nd Lass 19686	7	11	6	30	2,221·0	80·91	101·14
Canaan Beauty 2nd 21172	7	4	24	7	611·0	19·77	24·71
Canaan Beauty 2nd 21172	7	4	24	30	2,565·9	82·27	102·84
Conway Posch Butter Girl 19685	8	0	21	7	458·0	16·76	20·96
Conway Posch Butter Girl 19685	8	0	21	30	1,929·0	68·57	85·72
Helena Keyes Posch 21376	6	8	23	60	5,941·5	176·51	220·64
Helena Keyes Posch 21376	6	8	23	90	8,452·5	252·49	315·61
Jewel Belle Dewdrop 2nd 20244	7	10	9	7	448·0	15·73	19·66
Jewel Belle Dewdrop 2nd 20244	7	10	9	14	831·0	30·25	37·82
Korndyke Canary Butter Maid 49648	2	5	24	7	404·5	15·42	19·28
Korndyke Canary Butter Maid 49648	2	5	24	30	1,545·5	55·25	69·07
Ormsby Rhoda Maud 44200	2	11	5	7	354·5	12·86	16·07
Ormsby Rhoda Maud 44200	2	11	5	30	1,431·5	50·41	63·01
Ottawa Bessie Ann 27130	6	9	3	7	587·5	21·04	26·31
Ottawa Bessie Ann 27130	6	9	3	30	2,303·0	80·37	100·47
Rosa Bonheur Flower 24620	6	9	4	7	469·5	15·30	19·13
Rosa Bonheur Flower 24620	6	9	4	30	1,898·5	61·02	76·28
Topsy Keyes 15669	9	0	12	7	453·0	16·48	20·61
Topsy Keyes 15669	9	0	12	30	1,909·5	66·77	83·47

Exhibitions.—This year a start was made in exhibiting live stock in open competition at the fairs. Two junior Ayrshire bull calves were shown at the Ottawa winter fair and had the distinction of winning first and second in their class. These animals have since been sent to Branch Farms to head the Ayrshire herds maintained there. It is proposed to enlarge upon this work at the coming fall and winter fairs.

SHEEP

The flock of sheep is composed of Leicesters and Shropshires of good type and quality. At the close of the fiscal year there were 175 head in the flock. The flock is still handicapped by lack of pasture which is largely responsible for the rather poor returns this year, there being a small debit balance. Next year unlimited range for sheep will be available, therefore a much better showing is expected. Some sheep were exhibited at the Ottawa Winter Fair but not with the signal success attending the exhibition of cattle. However, they made a creditable showing.

SWINE

There are now 305 swine of all ages on the Central Farm, a larger number than ever maintained before and an increase of 26 over the previous year. Many difficulties were met with in reference to experimental work, due, first, to a very dry early summer which made necessary the discontinuance of pasture experimental work with sows and growing pigs; second, to the results of a more or less severe infestation of intestinal parasites manifesting itself in the young and growing hogs; and third, to the difficulty in securing efficient hog-men to carry on such a fairly large enterprise. However, some excellent results were obtained.

While a large gross turnover was shown, $8,306.25, the actual profit was less than in other years due to high cost of feeds and labor, little demand for breeding stock, low selling price and to other causes already mentioned. However, accounting for all regular debit items, extra labour for experimental work, losses, etc., and in a year notable as one of the worst in the history of swine raising, a profit of $304.16 is shown

Summer Experimental Work.—The main experiment of the summer dealt with features already partially demonstrated the previous year. Pasture and limited grain vs. trough feeding vs. self-feeder (both fed outside) vs. trough and self-fed lots (inside feeding).

The results of this test indicated a cost per pound gain as follows:—

Pasture and limited grain	9.7 cents
Trough fed (paddock)	10.3 "
Self-fed (paddock)	9.8 "
Trough fed (inside)	8.6 "
Self-fed (inside)	9.3 "

Conclusions

1. Pasture feeding using a limited grain ration (trough fed) proved slightly more economical than where the self-feeder free choice system was used the year before, considering the higher cost of all feed.

2. That the self-feeding method proved slightly more expensive in cost per pound, but that the hogs so fed were ready for market from ten to fifteen days earlier.

3. That the self-feeder is a good hog fattener, but not to be recommended in the growing of young breeding stock. Trough feeding in this experiment proved more economical indoors. In outside feeding the reverse was the case.

4. That hogs fed in cool indoor quarters supplied with earth, charcoal, etc., and with a reasonable amount of green feed, make more economical gains than those similarly fed outdoors. Sun scald and sun burn generally is a most serious condition with the young white skinned hog.

Tankage vs. Fish Meal.—Three lots of 10 pigs each were self-fed meal and were supplied with: Lot 1, tankage, Lot 2, fish-meal, in separate self-feeders. Lot 3 was given no supplement.

Tankage fed lot cost	9.9	cents per	pound gain.
Fish-meal fed lot cost	9.4	" "	"
Lot receiving neither	9.89	" "	"

The fish-meal fed pigs compared very favourably with the check lot fed meal and milk at a cost of 9.3 cents. Previous tests have indicated excellent possibilities for fish-meal as a supplementary hog feed, and it is proposed to carry out more extensive work in this line.

The Self-Feeder.—Throughout all tests where self-feeders were checked against the trough-feeding method the average results bore out previous findings that about one-tenth of a pound more meal was required per pound gain with the former method, which does not balance the saving of labour so effected.

Summer-Housing.—Several types of summer cabins were kept under observation: (1) the A-shaped cabin; (2) the straight-walled cabin with tight sides; (3) the latter cabin with (*a*) roof-section hinged (*b*) one side hinged upward (*c*) roof-section and both sides hinged and hooked upward. The latter cabin (*c*) is infinitely superior for summer use affording relatively cool shelter. Hogs housed in tight-sided cabins preferred to lie outdoors in the sun, to the stuffy interior, while the improved type of cabin was highly popular on hot days. By closing the roof section, and lowering and securely fastening the hinged sides, this cabin is equally as useful for winter use as the tight-sided type.

Intestinal Parasites.—Carrying such a large number of hogs on limited area for the several previous years, has, apparently, resulted in parasitic infestation of a more or less severe character, a fact that has in the past caused rather serious losses with young pigs from five to eight weeks of age. All of this has resulted, notwithstanding the fact that summer quarters are changed, in following the regular swine rotation.

With the assistance of the Chief Pathologist of the Health of Animals Branch, it was demonstrated that in all probability the trouble with the young pigs was due to the effect of the larval stage of the common round worm (Ascarus). This stage is passed in the lungs, and causes excessive coughing, pneumonia, dry, pale skin, staring coat, indigestion and diarrhoea. Considerable investigational work was carried on in the Health of Animals laboratories, where it was found that other parasites, in particular the lung worm, were present.

It being impossible to treat the animal for this lung infestation the only method open was a treatment calculated to rid the sow of the adult worm responsible for the eggs, which in turn were taken up by the young pigs. The treatments took the form of the administration of:—

1. Oil of chenopodium and castor oil.

2. A proprietary anthelmentic in capsule form, made by the Funk Hog Farm, Bloomington, Ill.

3. A proprietary treatment consisting of oil of chenopodium and calomel administered in capsule form, known as Chencal.

All brood sows were treated before coming in to winter quarters, and are to be treated again before being placed in the farrowing pens. These pens are subject to through disinfection consisting first of thorough washing and hosing, disinfecting with a very strong solution of Wescol, followed by the application of dehydrated lime several days before the sow is brought in. While, at this juncture, it is impossible to make any statement of results, all litters so far appear healthy, but have not reached the age, as yet, when the results of the infestation are apparent. It is the intention to follow this line of investigation carefully for some years. Apparently there are many of the larger herds in Canada suffering from one or more forms of parasitic infestation so far little understood by the practical feeder.

Winter Experimental Work

Winter Housing.—A large number of hogs were fed during the winter months to throw further light on the question of types of winter shelters best adapted. The results in general are as follows:—

Fall litters fed outdoors with a large shed and straw covered berth for shelter, showed little tendency to rheumatism or crippling, but did not develop properly. Hogs of the same age fed in a closed shed showed better gains, but greater tendencies to crippling, while in a warm piggery practically the same result was noticeable. The practical observation was that the best method of raising fall litters is to supply a low straw covered berth in a well protected shed with access to a barn-yard. Two important points were noted,—first, that young pigs should not be fed in lots of more than ten or twelve and, second, that they should be three months of age before being subjected to outside conditions.

Summer Litters

Finishing.—

1. Lots fed indoors showed good gains, but greater tendencies to go off their feet or cripple. Average cost of indoor feeding, 12·1 cents per pound.

2. Lots fed in a closed shed showed in this instance equal liability to crippling, which was at variance to previous findings and likely due to overcrowding. Average cost of feeding, 12·3 cents per pound.

3. Lots self-fed in an open shed with yard and sleeping berth; no crippling; cost to produce one pound gain, 11·5 cents. Trough-fed (as above), 2 per cent showed signs of crippling; cost to produce one pound gain, 11·76 cents.

NEW BUILDINGS

Besides a well equipped slaughter-house, there has been added a very complete little smoke-house with facilities for curing and smoking meats. During the past winter large numbers of hogs have been butchered and sold to farm officials and employees at market prices. A very serviceable cheap type of shed piggery with yards has been constructed with different interior arrangements. This has proven most satisfactory, illustrating as it does, the fact that expensive buildings for swine are not only unnecessary but less successful as well.

BRANCH FARMS

Owing to partial disorganization of the Animal Husbandry Division and to the press of routine work at the Central Experimental Farm, the Acting Dominion Animal Husbandman was unable to visit the Branch Farm System other than certain Farms in the province of Quebec. Every effort, however, has been made toward the assistance of Superintendents in the purchase of stock, feeds, etc., and in every way possible through correspondence.

BUILDING PLANS

While little building work has been under way, a number of plans for buildings on the Farm System have been prepared. It is hoped to begin operations upon the much needed dairy building at the Central Experimental Farm early in the next fiscal year.

Over 600 plans and specifications of farm buildings have been forwarded to farmers throughout the Dominion. This line of assistance has become exceedingly popular and is only held back by lack of staff.

MISCELLANEOUS

The Acting Dominion Animal Husbandman, together with the staff of assistants, has visited numbers of exhibitions, shows, meetings, demonstrations and short courses. Considerable judging work has been undertaken throughout Ontario and Quebec. Increased correspondence and routine work, in general, has taken up much of the time of the staff.

DIVISION OF FIELD HUSBANDRY

REPORT OF THE ASSISTANT DOMINION FIELD HUSBANDMAN, W. L. GRAHAM, B.S.A.

The soil cultural and rotation experiments that have been under investigation for several years now have been continued at the Branch Experimental Farms and Stations, and at the Central Experimental Farm at Ottawa.

The cost of production of crops grown under field and rotation experiment conditions has received considerable attention and data of results compiled, which are available for distribution to the farmers of Canada.

The shallow versus deep ploughing experiment which has run now for sixteen years has been concluded and while yields in the different plots varied considerably from year to year, there has been no appreciable difference in the returns from the two systems of cultivation for the whole period.

WEATHER CONDITIONS AND CROP YIELDS

In spite of unfavourable weather conditions the crops at the Central Experimental Farm at Ottawa have been fairly good. The dry weather that set in early in the season was not conducive to record yields, but a yield per acre in an off year of 51 bushels of oats, 14 tons of ensilage corn, 14 tons of mangels and over 2½ tons of hay is sufficient to demonstrate that by proper cultural methods and the following of a suitable rotation, the effects of adverse weather conditions can be reduced to the minimum.

YIELD OF FIELD CROPS, CENTRAL EXPERIMENTAL FARM, 1919.

Crop	Area	Total Yields				Average Yield per Acre			
	acres	tons	lb.	bush.	lb.	tons	lb.	bush.	lb.
Corn	40	562	1,470	.....	.....	14	136	.....	.....
Roots	3	43	1,675	.....	.....	14	1,225	.....	.....
Oats	34	.....	.....	1,757	24	.....	.....	51	23
Oat straw	34	36	13	.....	.....	1	118	.....	.....
Hay	40	103	140	.....	.....	2	1,153	.....	....

COST OF PRODUCTION OF FIELD CROPS, 1919

The data obtained on the cost of production of field-crops are determined from fixed cost and return values. This is necessary in our work in order that the rotation and individual plot results within a rotation may be compared. This year the cost of production is not high when compared with the yield:—

Crop	Area	Yield per acre		Cost to Produce		
				Per acre	Per ton	Per bush.
	acres	tons	bush.	$	$	cts.
Mangels	3	14·61	487	39 08	2 67	8·02
Ensilage corn	40	14·06	.....	26 88	1 91	
Oats	34	.....	51·6	16 81	.....	26·25
Oat straw	34	1·06	.....	.....	3 08	
Hay	40	2·57	.....	20 61	8 00	

ROTATION OF CROPS

For various purposes, fifteen rotations are under way at this Farm. From these tests important conclusions have already been drawn, and the results now being obtained are providing valuable data. The rotations being conducted under regular farm conditions are as follows:—

Rotation "A" (five years' duration).—First year, hoed crop, manured; 2nd year, grain seeded down with clovers and grass; 3rd year, clover hay, top dressed with manure in autumn; 4th year, timothy hay, field ploughed in August, top worked and ribbed up in October; 5th year, grain seeded down with red clover to be ploughed under the following spring, when the succeeding hoed crop is corn.

Rotation "B" (five years' duration).—First year, hoed crop, manured; 2nd year, grain, seeded down with clovers and grass, top dressed with manure in autumn; 3rd year, clover hay, ploughed in autumn; 4th year, grain seeded down with clovers and grass; 5th year, clover hay.

Rotation "C" (four years' duration).—First year, hoed crop, manured; 2nd year, grain seeded down with clover and grass; 3rd year, clover hay; 4th year, timothy hay field ploughed in August, top worked and ribbed up in October.

Rotation "D" (three years' duration).—First year, hoed crop; manured; 2nd year, grain, seeded down with clovers and grass; 3rd year, clover hay.

Soiling Crop Rotation "R" (three years' duration).—First year, corn for early fall feed, manured; 2nd year, clover hay to cut green.

The records for the past year from the rotations outlined in the foregoing are given herewith.

COST, RETURNS, AND NET PROFITS OR LOSSES FROM ROTATIONS, "A", "B", "C", "D", AND "R", 1919.

Rotations	Cost to operate per acre	Value of returns per acre	Profit or loss per acre
	$ cts.	$ cts.	$ cts.
"A" (five years' duration)	19 81	19 88	0 07
"B" (five years' duration)	19 55	16 75	−2 80
"C" (four years' duration)	19 27	16 60	−2 67
"D" (three years' duration)	21 68	19 12	−2 56
"R" (three years' duration)	21 83	22 15	0 32

SUMMARY OF RESULTS OF ROTATIONS "S" AND "P"

Shallow ploughing versus deep ploughing

Year	Rotation "S" Shallow ploughing and sub-soiling			Rotation "P" Deep Ploughing		
	Cost of operation per acre	Value of crop per acre	Profit per acre	Cost of operation per acre	Value of crop per acre	Profit per acre
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1904	19 89	22 98	3 09	19 89	22 98	3 00
1905	22 88	36 74	13 86	22 89	36 89	14 00
1906	19 35	25 06	5 71	19 39	24 93	5 54
1907	20 13	27 63	7 50	20 29	27 41	7 12
1908	15 84	20 21	4 37	16 03	20 34	4 31
1909	16 65	25 64	8 99	17 05	25 80	8 75
1910	13 67	23 36	9 69	14 42	23 60	9 18
1911	14 24	26 25	12 01	14 53	26 72	12 19
1912	19 47	27 14	7 67	19 02	28 99	9 97
1913	18 13	17 71	−0 42	17 52	18 34	0 82
1914	17 96	20 33	2 37	17 36	21 12	3 76
1915	19 02	25 70	6 68	18 84	24 35	5 51
1916	18 83	22 76	3 93	18 84	21 55	2 69
1917	19 38	25 70	6 32	19 36	23 29	3 92
1918	20 10	25 88	5 78	20 14	22 84	7 70
1919	19 92	20 29	0 37	19 89	20 71	0 82
	295 46	393 38	97 92	295 48	269 86	99 28
Average 16 years	18 47	24 59	6 12	18 47	23 12	6 20

New experiments are under way, the data from which will not be available to the public for several years yet.

DIVISION OF HORTICULTURE

REPORT OF THE DOMINION HORTICULTURIST, W. T. MACOUN

The season of 1919 was a favourable one for fruits and vegetables on the whole at the Central Experimental Farm. One of the best crops of apples in the history of the orchard was gathered. The plum crop was also good, and the season proved particularly favourable to grapes, many varieties of which ripened. There were also good crops of small fruits such as strawberries, currants, gooseberries and raspberries. It was a favourable season also for vegetables, though the potato crop was not as large as in some other years.

FRUITS

Breeding New Varieties.—The work in improving varieties of fruits was given special attention this season, strawberries, raspberries, gooseberries, grapes, and hardy apples for the northwest being stressed particularly.

Crosses were made among strawberries, the following parents being used both as males and females where the variety is perfect, or only as females in the case of their being imperfect: Bisel, Beder Wood, Early Jersey Giant, Francesca, Greenville, J. H. Cooke, Mele, New Globe, Parson Beauty, Pocomoke, Portia and Valeria.

In raspberries the following were used as parents: Brighton, Cuthbert, Herbert, Loganberry, Newman 23, Rubus odoratus, and St. Regis. All were selfed, and intercrossed, reciprocals being made in every case.

Breeding work in gooseberries consisted of crosses between the most promising American varieties and the best English and Grossularia varieties. Some four or five hundred crosses between R. oxyacanthoides, R. Cynosbati and Grossularia, made in the Horticultural Division at the Central Farm, fruited in 1919. From these several promising bushes have been isolated, among them being a few thornless ones bearing medium-sized fruit. These will be used for future breeding work.

Freedom from mildew, combined with the size and quality of the English varieties, and the retaining of productiveness are the aims. If thornlessness can be incorporated without impairment of the other factors so much the better.

As previously mentioned the work with apples was entirely for the improvement for the northwest of the existing hybrid crabs. Crosses and reciprocal crosses were made, using the best of several crosses which had already fruited, and the best hardest commercial sorts. Among the hybrid crabs, Rosilda, Redman, Lora, Printosh, were used while from the commercial sorts, Duchess, Wealthy, McIntosh, and Dudley were selected.

Promising New Varieties

Many of these new varieties of apples, plums and small fruits were originated at the Central Experimental Farm, Ottawa, Ont.

Apples.—Attention is again called to some promising varieties of apples originated by this Division. Among these is Melba, which appears to be finding a place in commerce. It is a very beautiful, high quality, early apple of good size. This variety is doing well in Nova Scotia and good reports have been received of its behaviour in various parts of Canada. Resembling McIntosh in quality and bouquet, the season of that superb variety is thus extended to August.

Following Melba in season there is Joyce, another apple of the McIntosh class which is finding favour. Both these varieties possess that high colour so desirable in early sorts, and this, combined with their quality, places them in the first rank of early sorts.

Niobe is a seedling of Northern Spy and a mid-winter variety, of high quality. It is now in the hands of nurserymen, and should be on the market in large numbers in a few years.

Plums.—The list of good varieties of plums which may be grown in the coldest parts of Ontario and Quebec is being gradually extended in a most encouraging manner. The Omaha and Emerald plums, both productions of the late Theodore Williams of Nebraska, are very desirable. These are hybrids between Americana and Triflora. The Omaha is an early variety of very good size, handsome appearance and good quality. It is an excellent shipper, and the tree is hardy and a regular bearer. The Emerald is very similar to the Omaha but much later. Both varieties deserve a place in the plum orchards of Eastern Ontario and Quebec.

In the Horticultural Division special attention is being paid to the improvement of the native plum, *Prunus nigra*. To date, from a large number of seedlings of these native plums, two have been selected as worthy of name. They are Ottawa and Rideau. On acount of their extreme earliness these are particularly valuable. They come early in August long before most varieties of plum are ready. They make excellent jam and jelly and are rapidly increasing in popularity on the markets, so that it is questionable whether they are not our most profitable plum. For the past two years they have sold on the Ottawa market for from seventy-five cents to one dollar and a quarter for six-quart baskets. The opportunities contained within the species Nigra are many, and crossed with Triflora this species should give some varieties equal to the best now grown in the large fruit districts. Growers will do well to pay more attention to the improved and earliest varieties of Nigra.

Small fruits.—Portia strawberry is a new variety originated at the Central Experimental Farm, which has demonstrated its fitness as a canning and shipping berry of unusual merit. This variety is an imperfect sort and requires a pollinizer for which purpose Parson Beauty seems suited.

Among gooseberries the Horticultural Division is introducing the variety Mabel. This berry has been outstanding in yield, vigour, and freedom from disease. It is also large and of good quality. It is hoped to introduce this variety to the trade during the next season.

The Kerry black currant, another Experimental Farm variety has, together with the Saunders and Climax, been introduced to the trade. Reports from commercial plantations of these varieties are very encouraging.

A new variety of raspberries, Newman No. 23, originated by Mr. C. P. Newman, Ville la Salle, Que., which has been under test here for some few years, gives promise of great things. This variety, not yet introduced and still held under restriction, is outstanding in firmness, and therefore an excellent canner and shipper, It is of large size, good colour and is a heavy cropper. Altogether it is the most promising new commercial variety.

Among early raspberries nothing in the Horticultural Division trial plots has equalled Count or Brighton, two Experimental Farm crosses. The former of these is probably the better shipper and yielder, but both are exceptionally early and of very good quality for early sorts. They are now being multiplied on a large scale.

VEGETABLES

Most of the experimental work with vegetables in progress in recent years was continued in 1919, and some interesting results were obtained. The breeding of new varieties of early vegetables continues to be an important part of the work, and some of those originated at the Central Experimental Farm gave a good account of themselves.

Corn.—The early Malcolm and Sweet Squaw corn have been introduced to the trade and are finding favour in many quarters. These are both earlier than the Golden Bantam, and are good sorts to lengthen the season of corn of high quality. The Sweet Squaw is particularly suitable for the Prairie Provinces. The Pickaninny, a dwarf black seeded variety, is still earlier than either of these other varieties, and is proving a very useful corn.

Potatoes.—Many experiments with potatoes have been carried on in the Horticultural Division during the past twenty-five years, but in recent years two experiments have been given special attention at Ottawa. These are in regard to time of planting and source and quality of the seed.

Source and Quality of Seed.—Since 1907, experiments have been in progress at Ottawa in comparing the results from seed potatoes of the same variety from various sources, from selected and unselected tubers, from different dates of planting, from different dates of digging, and from different methods of storing in order to determine how to get the best seed. The results of this work up to 1917 were reported upon in Bulletin No. 90, "The Potato in Canada," by the writer. The last few years' experimental work has proved that the great differences obtained in yields of the same variety at Ottawa are not due to seed from any particular time of planting or digging, nor to methods of selection or storage, but the great differences in yield depend on whether the potatoes were grown the previous year near other potatoes with poor tops, which poor tops had been caused by one of the obscure physiological diseases to which the plant pathologists have been paying particular attention in recent years.

The following table shows the results obtained in 1919 from Central Experimental Farm Green Mountain seed which had been grown in 1918 from potatoes which had been giving very poor crops for several years as compared with stocks obtained from the cooler parts of Canada. These results, it is believed, prove that most of the differences between the yields from seed brought from the cooler parts of Canada, and seed secured at Ottawa and other places in Ontario are due to the fact that certain as yet obscure diseases are not prevalent, or do not cause material reduction in the crop, where the climate is relatively cool. Experiments in this direction are being continued.

Variety	Source of Seed	Total Yield per acre		Yield per Acre marketable		Yield per Acre unmarketable	
		bush.	lb.	bush.	lb.	bush.	lb.
Green Mountain.....	C.E.F., Ottawa...	330	00	286	00	44	00
Green Mountain.....	Fredericton, N.B.	312	24	299	12	13	12
Green Mountain.....	Northern Ontario.	299	12	277	12	22	00
Green Mountain.....	Rimouski, P.Q....	206	48	193	36	13	12

Dates of Planting Potatoes.—Irish Cobbler, an early variety, and Green Mountain, a medium late sort, were used.

Irish Cobbler was planted May 15 and 29, and June 12 and 26, in 1915; May 14 and 27, and June 10 and 24, in 1918; May 17 and 31, and June 14 and 28, in 1919. Three years' average yields per acre of marketable potatoes were: 1st planting, 324 bushels, 42 pounds; 2nd planting, 249 bushels, 42 pounds; 3rd planting, 207 bushels, 32 pounds; 4th planting, 124 bushels, 40 pounds.

Green Mountain was planted May 15 and 29, and June 12 and 26, in 1915; May 12 and 26, and June 9 and 23, in 1917; May 14 and 27, and June 10 and 24, in 1918; May 17 and 31, and June 14 and 28, in 1919. Four years' average yields per acre of marketable potatoes were: 1st planting, 307 bushels 27 pounds; 2nd planting, 264 bushels 51 pounds; 3rd planting, 236 bushels 24 pounds; 4th planting, 79 bushels 45 pounds.

It will be seen that there was a regular decline in yield from the first to the fourth dates of planting in both varieties.

These results confirm those which were obtained years ago when a test was made of different dates of planting for six years; it was found then that the highest average yields came from the earlier plantings, as has been the case at Ottawa in these later experiments. These results have been found to be true of all parts of Canada with, perhaps, the exception of the Maritime Provinces.

Tomatoes.—For the past twenty years experiments have been in progress in tomato breeding. One of the chief objects in this work was to obtain a variety which would ripen a large proportion of its crop in the early part of the season when prices were high. The Alacrity tomato, resulting from this work, has been on the market for some years. It has proven particularly valuable in the cooler parts of Canada where it is difficult to ripen a large proportion of the tomato crop. Very favourable reports were received of this variety in 1919. Crosses have been made to obtain, if possible, a smoother variety that would be just as early. Two of the most promising of these are Alacrity x Earlibell and Alacrity x Hipper.

Peas.—Experiments in breeding new varieties of garden peas have been made for the purpose of obtaining more productive early varieties with large pods and peas. Some of the most promising crosses in 1919 were English Wonder x Gradus and McLean Advancer x Gradus.

VEGETABLE SEED PRODUCTION

Experiments were continued in 1919 in growing biennial vegetable seed including beets, carrots, cabbage, onions, parsnips, celery and salsify, and useful information was obtained in regard to cultural methods and storage.

HOME CANNING

Experimental work in canning fruits and vegetables was continued in 1919. Different varieties were compared for canning purposes and various recipes tried. Demonstrations were given to the public which proved very popular. A bulletin giving the results of two seasons' experimental work called, "Preservation of Fruits and Vegetables for Home Use," was published, and proved very useful.

GREENHOUSES

Experiments were continued in the greenhouses in 1919 with the principal vegetable crops such as tomatoes, lettuce and cucumbers. A variety of tomato called Grand Rapids is very promising for the fall crop as it sets better than some of the others. Experiments in testing different varieties of head lettuce were continued, and it was found that the Early Paris gave best results. This lettuce has given the best average for three seasons, and is recommended as a non-scalding variety. There is a very fine collection of chrysanthemums at the Experimental Farm for comparison of varieties, and thousands of visitors took the opportunity of seeing these when they were in bloom. Particular attention was paid to the development of new varieties of geraniums in 1919 as in previous years.

ORNAMENTAL GARDENING

The ornamental grounds at the Central Experimental Farm are very attractive to the public, and there was a large number of visitors in 1919 to see the experimental work with trees and shrubs and herbaceous plants. The rose garden is of particular interest to specialists in this flower as there are many varieties under test. Fine collections of paeonies, iris, phlox and other special flowers may also be seen and the varieties compared.

BRANCH FARMS AND STATIONS

A visit was paid to each of the Experimental Farms and Stations in 1919 by the Dominion Horticulturist, and he also visited the sub-stations at Fort Vermilion and Beaverlodge, in the Peace River District. In this district small fruits such as raspberries, currants, gooseberries, and strawberries, succeed well, but tree fruits are difficult to grow. Most vegetables succeeded admirably and flowers bloom in abundance.

CORRESPONDENCE

Brief reference is made to the correspondence, which, however, is one of the chief features of the work and takes much time. Notwithstanding the many agencies in Canada for disseminating information in regard to horticulture, the correspondence of the Horticultural Division steadily increases. It is felt, however, that this is very useful work, as anyone taking the trouble to write for information desires to get it and is likely to profit by it.

POULTRY DIVISION

REPORT OF THE DOMINION POULTRY HUSBANDMAN, F. C. ELFORD

The year 1919-20 may be considered a fairly satisfactory year in poultry keeping, for though production was comparatively poor and feed high, the demand for all kinds of poultry produce, hatching eggs and breeding stock, reached a high-water mark.

The winter of 1918-19 was mild and resulted in a comparatively high egg production, but the following spring was cold and backward and the hatching correspondingly late and unsatisfactory. The pullets being late were not matured in the fall and the past winter was very cold and the egg yield low. The supply of new laid eggs was so far below the average that dealers complained that the receipts were very much smaller than they had expected. Coupled with the low production was the continued high price of feed, all of which made production somewhat discouraging. On the other hand, the prices for eggs have been high. In some cities, new laids brought as much as $1.25 a dozen and even $1.50 was paid in exceptional cases. The demand for stock has also been good. The high prices in general have induced many persons to go into the poultry business, including a large number of returned soldiers. The city poultry keeper who kept a few hens in his back-yard during the war found that it paid, and he is still continuing to produce new laid eggs for his own table.

The war has eliminated a good many of the nondescript poultry keepers, and also the mongrel hens, and this has helped to put the poultry business on a better basis. Commercial poultry keeping is increasing, and those who are engaged in it in a large way are proving that it is a sound financial proposition, if handled as any business should be handled.

Therefore, though production was light and feed high, there was a ready sale for everything that was produced, and those engaged in poultry production as a business, a side-line or a hobby, have found that when proper methods were employed the results for the past year were satisfactory.

GENERAL WORK OF THE DIVISION

The work of the Poultry Division has continued to grow. At the end of the year the list of Farms conducting a poultry plant is as follows. The list includes the number of females and varieties of birds at each plant at the end of January, 1920:—

Station	Barred Plymouth Rocks	White Wyandottes	White Leghorns	R. I. Reds	Buff Orpingtons	Total
Agassiz, B.C.	169	37	155			361
Brandon, Man.	119	113				232
Cap Rouge, P.Q.	334					334
Charlottetown, P.E.I.	94		317			411
Fredericton, N.B.	118	74	35	16		243
Invermere, B.C.	136	30				166
Indian Head, Sask.	131	142				276
Kentville, N.S.	139	106				245
Lacombe, Alta.	141	110		94		345
Lennoxville, P.Q.	206					206
Lethbridge, Alta.	183	53				236
Nappan, N.S.	69	16	95			180
Rosthern, Sask.	129					129
Sidney, B.C.		261				261
Scott, Sask.	142	21			56	219
Ste. Anne de la Pocatière, P.Q.	84	70				154
Summerland, B.C.		225				225
Ottawa, Ont.	192	57	315			564
Totals	2,389	1,315	917	110	56	4,787

There are also a number of turkeys at Ottawa, Lethbridge, and Invermere, and geese and ducks at Ottawa and Kentville.

The demand for bred-to-lay cockerels from pedigree stock has been much larger than the supply. Breeding eggs are supplied in limited quantities, and more incubation space has been added to the equipment at a number of the Stations in order to supply day-old chicks to some of those who are so situated that they cannot hatch their own chicks early enough.

After several years' experimentation and observation, it must be admitted that there are sections in Canada where it does not seem practicable to attempt to hatch early chicks, and this applies to farmers as well as to others. The only way for poultrymen in such districts to secure winter egg production is to be able to purchase at a reasonable price, from a reliable source, early hatched day-old chicks. At the present time this supply is not available, and until such chicks can be purchased through other sources, this division is endeavouring to help by supplying a part of this demand.

Most of the Branch Farm poultry plants are now developing pedigreed stock and have reached a high average production and some record yields. This is particularly the case with Sidney, Vancouver island, and Indian Head, Sask., where good averages and high individual records have been obtained. A number of other Stations have done well, and though no exceptional individual records have been obtained, high averages have been secured at Agassiz, Lethbridge, Lacombe, Brandon, Lennoxville, and Kentville, which speak well for stock and management.

INVESTIGATIONAL AND EXPERIMENTAL WORK

The breeding for higher egg production under the supervision of Mr. George Robertson has been receiving attention throughout the whole system. More detail of this will be given in later paragraphs.

Poultry houses have received continued consideration. The results from the straw-loft farmers' house are still satisfactory. At the present time this house is

providing the very best of conditions and is, in most locations, the one which is recommended for the accommodation for one hundred or more birds.

The work on turkeys and waterfowl which, for several years, has not been emphasized, is being taken up again, and it is expected that further investigation on the diseases and breeding of turkeys and waterfowl will be conducted.

Considerable data have been secured on feeds and feeding, in connection with all ages of birds, various rations for chicks, electric light for egg production, pituitary substance as a stimulant, etc. Work on incubation and brooding has been continued and further investigations on diseases carried on.

BREEDING AND PEDIGREE WORK

Pedigree breeding work has been carried on at the Central Farm for years. It is intended gradually to extend this work until it is conducted on every Farm of the entire system. The ultimate aim is to produce heavy laying strains from the leading varieties of fowl, always keeping in mind standard qualities.

Unfortunately, at the start, owing to limited accommodation, progress was not as rapid as could be wished, so instead of working on the two, it was deemed advisable to overlook the standard qualifications and devote attention entirely to laying qualities.

This year, with a view of getting started on standard lines, about sixty exhibition bred White Leghorn pullets are being carried over, and it is hoped that enough heavy producers may be secured to give a foundation for a new line.

To carry on pedigree breeding each bird is leg banded, the band being stamped with the number representing the individual bird and letters are used to indicate the year, thus: A-1, B-1, C-1. This would indicate that A-1 was hatched a year before B-1, and B-1 a year before C-1. Trap-nests are used, and when a hen enters the nest to lay she is "trapped" until the attendant takes her out of the nest, notes the number of her leg band and marks it on the egg. Each hen is credited with every egg she lays, and in the breeding season records are kept of the eggs set and the chicks hatched. On the 18th day of incubation the eggs are put into covered wire baskets, a separate compartment for each hen's eggs so that when the chicks are hatched, the breeding of each individual chick is traceable by reference to the records.

The chicks are then leg banded with small bands, which in about three weeks are taken from the legs. Slits are then made in the wings where the bands are inserted and sealed. These wing bands remain on the birds throughout life so that in case the adult leg bands, which are put on when the birds go into winter quarters, are lost, these wing bands will identify the birds.

For the recording of the work, various forms are used, viz., Monthly Egg Records, Mating, Hatching and Chick Records. These all lead up to, and are incorporated in, the Egg and Breeding Records, on the reverse side of which is given the pedigree and photographic record, so that this latter form contains all the required information of the individual bird.

While progress is of necessity slow, considerable advancement is being made. For instance there was a strong feeling that high egg laying records could not be made in the Prairie Provinces owing to the severity of the weather. It has been demonstrated that this is not so. At the Indian Head Farm some good records have been made. One White Wyandotte pullet, "Prairie Queen," laid 259 eggs in a year. At the Lethbridge Farm where Barred Plymouth Rocks are kept, there have been very high averages and there will be some good individual records made this year.

The most noteworthy pedigreed records to date are those made at the Experimental Station at Sidney, Vancouver island, where the White Wyandotte, "Island Queen," with a record of 261 eggs in her pullet year, has produced the following six daughters that have given good records: "Island Princess," 274 eggs, "Princess Victoria," 300 eggs, "Princess Royal," 291 eggs, "Princess Ena," 243 eggs, "Princess Alice," 201 eggs; and "Princess Mary," 214 eggs. The average production for the six sisters

was 254 eggs. As "Princess Victoria" is the first 300-egg hen produced on the Experimental Farm System her egg record is given in full to illustrate her performance throughout the year.

Space will not permit going fully into the details of the breeding work, but on application to this division, it will be gladly furnished.

VARIETY—WHITE WYANDOTTE. HATCHED—APRIL 28, 1918. CHICK BAND NO. 86. OUT OF MATING B-2. ADULT BAND NO. 279.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals	
November..	1	1	1	..	1	1	1	1	1	..	1	1	..	1	1	1	1	..	1	1	..	1	1	..	1	1	..	1	1	1	..	23	
December..	1	1	1	1	..	1	1	1	1	..	1	1	1	..	1	1	1	1	1	..	1	..	1	1	1	..	..	1	1	1	1	24	
January.....	1	1	..	..	1	1	1	1	1	1	1	1	..	1	..	1	1	1	1	1	1	..	..	1	1	1	..	1	1	1	..	23	
February...	..	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	..	1	1	..	..	24	94
March.....	1	1	1	1	1	1	1	1	..	1	..	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28	
April.....	1	1	1	..	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	..	1	1	1	..	28	
May.....	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	N	B	..	..	..	..	..	O	..	N	1	1	1	1	..	19	75
June.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30	
July.....	1	1	1	1	1	..	1	1	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	..	1	1	1	1	1	1	28	
August.....	1	..	1	1	1	1	1	1	..	1	1	1	1	1	1	1	1	..	1	1	..	1	1	1	..	1	1	1	..	1	1	25	83
September..	1	1	1	1	1	1	..	1	1	1	1	1	..	1	1	1	1	1	1	..	1	1	1	1	..	1	1	1	1	1	..	26	
October.....	1	1	..	1	1	..	1	1	..	1	1	1	..	1	1	1	..	1	1	..	1	1	..	1	1	..	1	1	..	1	1	22	48
Total.....																																	300

Body Weight 5 lb. 5 oz. Egg Colour, Tinted. Egg Weight 25 oz. B-Broody. N. On Nest.

DISEASE INVESTIGATION.

The work undertaken by Dr. A. B. Wickware in relation to poultry diseases is progressing favourably. Experiments are being conducted on avian tuberculosis, to determine, if possible, its exact relation to the types of this disease to be found in the domesticated animals. These are in the nature of sensitization experiments which will be reported on later.

The life-history of certain parasites and mites such as those causing scaly leg is being worked out. A flock is being kept under observation at the Biological Laboratory. The study of the life-history of these poultry parasites involves the length of time necesary for the infection to show up in contact fowls, the degree of infection and the longevity of the parasites in infected quarters.

Study and experiments are also being conducted on chicken-pox to determine the efficiency of different vaccines in the treatment and prevention of pox, canker, roup, etc.

A collection of internal worms such as tape-worms, round worms, etc., is being made to determine the particular species of worm found in Canada and the locality peculiar to certain types.

The problems to which attention is directed and concerning which more work is contemplated may be summed up as follows.—

(1) A complete study of the conditions known as contagious epithelioma or chicken-pox, roup, canker, swelled head, etc. These affections which are now considered to be only different manifestations of one and the same disease are very prevalent throughout Canada and occasion serious losses not only by a large mortality rate but by decreased egg production in slightly affected fowls.

(2) Leg weakness or transient paralysis of fowls, which is also very common and usually affects the best layers thus reducing the egg yield to a minimum.

(3) Tuberculosis of fowls, which annually accounts for large numbers of deaths and for the eradication of which comparatively nothing is being done. This disorder is

prevalent throughout Eastern Canada and from the numerous inquiries received appears to be firmly established in all the Prairie Provinces.

(4) Parasitic infections, including internal and external parasites. A complete survey, relating to distribution, life histories, etc., is urgently required.

(5) Entero-Hepatitis or blackhead in turkeys. This disease is making big inroads and rapidly depleting the flocks at present in Canada. So far, no progress has been made in combating this affection and comparatively little is known as to the cause, means of transmission, etc.

This list might be largely supplemented by chick diseases, keel in ducks, etc., but only a few of the disorders of mature fowls are herewith tabulated.

CHEMICAL INVESTIGATION

In March, 1919, Mr. R. L. Dorrance, of the Chemistry Division, was detailed by the Dominion Chemist to devote his time to chemical research for this division.

Mammoth Incubator.—At that time, a 10,000-egg mammoth incubator which had recently been installed was not giving satisfactory results, and this was the first subject of investigation. It was suggested that the fault lay in lack of ventilation in the cellar, the exhausted air from the machine remaining in the cellar, and being drawn into the machine causing such a concentration of carbon dioxide gas in the machine, that the developing embryos were smothered. A number of determinations of the moisture and carbon dioxide content of the air in the incubator were made, and these compared with the results of readings made on a 150-egg Cypher's and a 400-egg Buckeye. These two incubators, both of which were giving satisfactory results at the time the test was made, are lamp machines, the former being a hot-air machine and the latter a hot-water machine. The results of these determinations as well as a short resumé of work done by previous investigators was reported at the close of the incubating season. The average moisture content of the 10,000-egg machine was found to be 0.602 per cent as compared with 0.910 per cent in the 150-egg Cypher's and 0.896 per cent in the 400-egg Buckeye. The average carbon dioxide content was 0.266 per cent in the 10,000-egg incubator while in the 150-egg Cypher's it was 0.252 per cent and 0.206 per cent in the 400-egg Buckeye. The air in the room was found to have a moisture content almost indentical with that of the 10,000-egg machine and a lower carbon dioxide content, 0.192 per cent. Basing a conclusion on these data, it would seem that the poor results from the 10,000-egg machine were due not to an excess of carbon dioxide but possibly to a low humidity.

The results obtained from the investigation, from a study of the works of previous investigators and from the experience of the average poultryman showed quite clearly that there was a great need for further work on this subject. To that end, an experimental incubator was designed and built.

Eggs.—A start was made on the physical and chemical characteristics of eggs. Up to date about 150 eggs have been measured and weighed, their columns calculated and the specific gravity determined. One dozen eggs from each of the breeds kept by this division, viz., Barred Plymouth Rocks, White Leghorns and White Wyandottes, were analysed to determine if there is any chemical and hence nutritional difference in the eggs of the different breeds. The results showed little or no difference. It seems quite probable that there is as much difference in eggs from individual hens of the same breed as in the average of a number of eggs from hens of different breeds. The average physical characteristics and chemical composition of hen's eggs were found to be as follows:—

PHYSICAL CHARACTERISTICS.

Length	5.55 cms.	Per cent shell	14.01
Breadth	4.02 cms.	" white	53.59
Weight in air	51.7901 gms.	" yolk	32.40
Sp. Gr.	1.079		

CHEMICAL COMPOSITION OF HEN'S EGGS.

Shell or refuse	14.01 per cent.
Moisture	63.47 "
Protein	10.87 "
Fat	10.59 "
Ash	0.80 "
	99.74 per cent.

CHEMICAL COMPOSITION OF WHITE, YOLK AND EDIBLE PORTION OF EGGS.

Composition of	White Per cent	Yolk Per cent	Edible Portion Per cent
Moisture	89.02	48.66	73.81
Protein	9.91	17.16	12.64
Fat	0.28	32.22	12.31
Ash	0.49	1.66	0.92
	99.70	99.70	99.68

Chick Feeding.—During the months of July and August some experimental work in chick feeding was carried on. Twelve pens each comprising 44 chicks, as nearly alike as possible, were fed on different rations for five weeks. Pen No. 1, fed wholly on cracked grain as a scratch feed and ground grains as a mash with water to drink, made the lowest gain, 1·67 ounces, and suffered the highest mortality, 31, in the five-week period. Pen No. 11, fed on cracked grain in the litter for scratch feed and a mash consisting of ground grain to which boiled egg and meat meal were added with a supply of green feed and milk to drink, made the best gain, 5·85 ounces, and thirty-five birds were alive at the end of the test. A study of the results from the different pens showed that eggs, meat meal and greens are essential for proper vitality and development, and of these, eggs played a very prominent part.

Further chemical research work is being conducted on incubation, brooding, feeds, nutrition, the value of eggs and poultry in the diet, etc., the results of which will be reported as the work progresses.

EXTENSION WORK

Under this department comes such work as "Exhibitions," "The Farm Egg and Poultry Account," "Survey Work," "Judging," "Institute Work," and the work conducted by the poultry inspector for the Maritime Provinces.

Exhibitions.—During the year the Poultry Division has contributed to all the exhibits made by the Extension and Publicity Division throughout the Dominion, and in addition to this, a special poultry exhibit under the supervision of Mr. W. T. Scott, covered a circuit of eleven fairs in Ontario during November, December, and January.

The exhibit was an arrangement of coloured transparencies of different varieties of fowl, poultry houses, etc., with appropriate legends, a number of models of the best type of house or farm or back-yard and a good display of feeds in glass frames. A representative trio of live fowl of the most popular utility breeds was included, with their distinctive merits plainly lettered on the coops.

The exhibit has been received with great enthusiasm by the officials of the local associations and the general public. The interest shown and the apparent desire for information have been gratifying, and a number of letters of congratulation have been received by the division, and many requests for the return of the exhibit at some future date.

There is no better method than this of getting in direct touch with the right person. In some instances, where advice is sought, the work has been followed up by a visit to the farm of the applicant and practical help and advice given.

Farm Egg and Poultry Account.—This is a simple form for the purpose of supplying a convenient method of keeping accounts in the poultry plant.

One of the troubles in poultry keeping is the lack of business methods. Few pretend to keep any accounts of the expenditures and receipts, and as a result, poultry profits are more or less in doubt.

To offer a simple method of keeping accounts and to prove that a well managed flock is a paying investment, these account forms were distributed to those who would return a copy each month.

The advantage is mutual. Better methods have been adopted. Figures as to profit and loss are available. The Division obtained a good deal of useful information as to markets, feeds generally available, prices, and the outlook in the locality for the poultry industry. In return the farmer received the free blank forms, seasonable advice and replies to questions on feed and management.

The popularity and usefulness of the work were evident by the number of requests for the blanks, and though there is a good deal of correspondence and tabulating work involved, it is considered of great value to the correspondent and to the Division.

The information given in the following table as well as other data, was extracted from the reports sent in:—

Sectional Averages per Farm, Feed, etc.

Province or Provinces	Average number of hens per farm	Average cost of feed and appliances per hen	Average profit over expenditure per hen	Percentage of farms profitable
Quebec	52·9	$2·46	$2·30	82·0
Maritime Provinces	34·8	3·48	11·92	82·3
Ontario	38·9	2·32	1·63	82·6
Prairie Provinces	54·6	2·55	2·82	88·0
British Columbia	83·6	3·75	1·54	87·5
Average	52·9	2·91	2·04	84·5

The most pleasing feature of the table is that the great majority of the flocks show a profit, and that the profits are substantial, considering the outlay.

Survey Work.—Mr. R. Dumaine has continued the work started in Quebec from the Experimental Farms, and in addition to this he has acted as Inspector over similar work conducted at four centres by the Provincial Department. This inspection requires a visit to 115 competitors once every three months. He has also attended a large number of institute meetings and has assisted at the short courses conducted in that province. During the show season he also judged poultry at a number of fairs.

At the request of the Provincial Department he organized the first poultry association in lower Quebec. This association had its first poultry show at Ste. Anne de la Pocatière, March 21, where nearly three hundred birds were exhibited.

The demand for his services in the province has been such that the bulk of his time is taken up at this work and even then he cannot fill all the requests for assistance.

Inspection.—Something similar to the survey work conducted among the farmers surrounding the Experimental Stations in Quebec was the inspection work this year started in the Maritime Provinces by Mr. J. G. Morgan.

In addition to the survey work from the Experimental Farms, his duties includ assistance and advice to the poultrymen in charge of the work at the Farms, demonstrations and lectures at the Farms, speaking at Institute meetings, judging and demonstrating at fairs, the inspection of the laying contests conducted by the Experimental Farms at Charlottetown, Nappan, and Cap Rouge, and the inspection of the contest at Truro under the management of the Provincial Department of Nova Scotia.

EGG LAYING CONTESTS AND RECORD OF PERFORMANCE

The establishment of a Record of Performance for poultry which was instituted from the first of November, 1919, marks an advanced step in poultry keeping. At the present time, Record of Performance is divided into two sections, Section A and Section AA. Section A is the inspection of trap-nested flocks on the farmers' own premises, which comes under the supervision of the Poultry Division of the Live Stock Branch. Section AA is the trap-nesting of the birds in laying contests which are conducted by this Division.

The egg-laying contests conducted in 1919-20, with the number of birds and the locality, is given in the following table:—

EGG-LAYING CONTESTS, 1919-20.

Name	No. Birds	Location
Canadian egg-laying contest	500	Ottawa
Prince Edward Island egg-laying contest	220	Charlottetown
Nova Scotia Federal egg-laying contest	200	Nappan
Quebec egg-laying contest	200	Cap Rouge
Manitoba egg-laying contest	200	Brandon
Saskatchewan egg-laying contest	190	Indian Head
Alberta egg-laying contest	120	Lethbridge

This work has created considerable interest, and with the adoption of registration Record of Performance will be an established medium which will do away with the uncertainty of individual records, and will make it possible for the buyer to know what he is paying for.

BULLETINS AND CORRESPONDENCE

A number of the exhibition circulars are being re-written, one new bulletin, No. 91, "Poultry Feeds and Feeding," by George Robertson, was published during the year. Bulletin No. 87, on "Poultry House Construction," is exhausted and is being re-written.

The demand for poultry literature has considerably increased during the last year or two, as has also the correspondence.

TOBACCO DIVISION

REPORT OF THE CHIEF OFFICER, F. CHARLAN

The growing season of 1919 was notable for a period of drouth lasting from early in June until the middle of July. During this time the temperature was high, which brought on the seedlings rapidly and gave a supply ready for transplanting at an early date but the drouth made the work in transplanting very difficult. Growth was slow during the dry period and the plantations did not commence to grow vigorously until the end of July. The yields, however, were a good average in Ontario but in Quebec they were below the normal.

The high price paid for the 1918 crop led to an increased area being planted with tobacco both in Quebec and Ontario. The harvest in Quebec was one of the greatest obtained up to the present, especially in the districts north of the St. Lawrence. In Ontario a notable increase in the area planted to yellow flue-cured tobacco was noted, and especially an increase in the area under White Burley. In 1918 the burley harvest was estimated to be about seven million pounds, while in 1919 it rose to about twelve million pounds.

The prices paid for Canadian tobacco, especially Ontario grown, in the course the fall of 1919 were the highest ever yet obtained. The average price of good quality burley was 40 cents per pound, while the price paid for yellow flue-cured tobacco was about 60 cents per pound. Certain lots of Comstock Spanish grown in the province of Quebec were sold at 50 cents per pound but this price was not paid for a great deal of the crop.

While the Ontario tobaccos were absorbed by the market very rapidly, in the course of a very few days, the tobaccos grown in Quebec were bought much more carefully and slowly and during the winter no buyers were found willing to offer 40 cents per pound, although the demand of manufacturers for Canadian binders was still far from being satisfied. This can only be explained by the fact that many plantations of Comstock Spanish did not reach a sufficient development to furnish a good proportion of leaves suitable for wrappers. The buyers also felt that the area planted to tobacco had been so increased last year that they would have no difficulty in getting the quantity they required.

The curing of the crop of 1919 was carried out under very favourable conditions both in Ontario and Quebec. Speaking generally, the colour of the burley was brighter than in 1918 or 1917. The Quebec harvest contained a much smaller percentage of mildew than has been usual so that, although the produce was a little lacking in development, one may say that the crop as cured was in the best condition of anything produced for many years in that section of Canada.

EXPERIMENTAL STATION, HARROW, ONT.

The season of 1919 commenced very favourably. The seedlings did particularly well, which permitted of a large distribution among the tobacco growers in the district, many of whom had not been very successful with their seed beds.

As usual, the seed beds on the Experimental Station were steam treated in order to disinfect the soil. Series of experiments were continued from the previous year in order to demonstrate more fully the results so far obtained. It was again demonstrated that the semi-hotbed under glass is the best for this district. It requires more manipulation and watchfulness than the hotbed but it is more readily available for the majority of tobacco growers.

Disinfection of the seed bed by steam was found to be done thoroughly in thirty minutes if a boiler furnishing a pressure of 100 pounds be used. At first glance one might think that the soil could be disinfected by steam at a lower pressure by lengthening the process but it was found in such a case the great condensation of the steam moistened the soil so much that it caused a great deal of trouble. As far as final result goes, it would seem immaterial whether the soil be disinfected in the autumn or early in the spring. However, when a large area is to be put into crop it is better to commence the sterilization in the autumn in order to be more independent of spring weather conditions.

The sowing of dry tobacco seed gave better results than sowing the seed after it had been sprouted.

As to the plantation itself it was again shown that the complete preparation of the soil the previous autumn is one of the most important factors of success. In every case the plots prepared in the autumn gave a more profitable crop than those prepared in the spring, to say nothing of the fact that insect damage was much less on those plots prepared in the fall. Moreover, in nearly all cases the work can be done more cheaply in the fall than in the spring.

An experiment was carried on with chemical fertilizers. The effect of distributing the fertilizer with the seed drill as compared with spreading broadcast was studied. Sowing with the drill gave a better result than the broadcast method which may be explained possibly by the long drouth in 1919. The results will be further verified.

An experiment in transplanting at different distances apart, using each of the principal varieties of tobacco grown at Harrow, showed that the best results were obtained from planting at the following distances:—

Burley Broad Leaf	44	inches by	28	inches.
Burley Stand-up	42	"	" 26	"
Flue-cured	36	"	" 24	"

These distances may be recommended for the Burley. As to the flue-cured the distances may be slightly increased on light soil but on the Harrow Station it has been found necessary to plant a little more closely in order to avoid the production of tobacco a little too thick-leaved. The methods already recommended to combat the grey worm and horned caterpillar have been as effectual in 1919 as in preceding years. Diseases of the tobacco plants were less frequent in 1919 owing to the drouth. Tobacco root rot (*Thielavia Basicola*) spreads especially during moist seasons and on land not sufficiently drained or in soils containing a high percentage of clay.

As to harvesting, the practice of splitting the stem of the White Burley plants before putting them in the curing barn is to be recommended highly. This may be done without an increase in the cost, the drying of the plant is much more rapid and consequently the leaves are a better colour and a minimum amount of damage is incurred. The tests or varieties of yellow flue-cured tobacco carried on with a view to determining those best suited to Ontario, has indicated the following as being among the best: Warne, Hickory Pryor, Flanagan, Granville County Yellow, Adcock, Willow Leaf, Rich Wonder. Of all these varieties the best are the Warne and the Hickory Pryor. The Warne has been already established in Ontario for a long time and the growing of Hickory Pryor is spreading more and more. Under good conditions it is easy to obtain a yield from the Hickory Pryor quite as abundant as from the Warne accompanied by just as good colour and a better lustre.

The principal varieties of Burley tried in 1919 were the following:—

1 selection of Burley Broad Leaf,
1 selection of Burley Stand-up,
2 selections of Burley Resistant.

Burley Resistant and Stand-up show themselves much earlier than the Burley Broad Leaf and on the whole gave a brighter coloured crop. One of the Burley

Resistants gave the heaviest yield followed by the Burley Broad Leaf and the Burley Stand-up.

The varieties of tobacco for nicotine production seemed affected by the drouth early in the season and gave only very little yields.

The tests of commercial fertilizers carried on in 1919 indicated that for air-cured tobacco the following formula might be recommended:—

Sulphate of ammonia	180	pounds per acre.
Superphosphate	600	" "
Sulphate of potash	200	" "

and for the Burleys:

Sulphate of ammonia	400	pounds per acre.
Superphosphate	400	" "
Sulphate of potash	170	" "

In the case of the burleys some plots had received 12 tons of barnyard manure per acre, while the flue-cured tobacco plots had received no manure at all.

The advantages of using acclimatized seed over imported seed were again confirmed this year.

EXPERIMENTAL STATION, FARNHAM, QUE.

The seedlings at the Farnham Station were produced in semi-hotbeds without manure after the method recommended by this division for some years. Dry tobacco was used in sowing these beds. There was an abundance of seedlings produced although many planters in the district had poor success with their seed beds, the result most certainly of not following our advice to sow thinly using only about 1/7 of an ounce of good seed to 100 square feet of bed. Thinly sown seed beds well ventilated, even under the somewhat rigorous climatic conditions of the Province of Quebec are the first requisites for success. In taking into consideration the care given to the making of the seed beds and attending to them, it was found possible to produce seedlings at a price of about $1.50 per thousand. Even this price may be somewhat cut down. The plantation was carried on rapidly from the 3rd to the 13th of June during very warm weather. The nights, however, were chilly which aided in the establishment of the plants and reduced the number of replacements to the minimum of some two or three per cent. Injury from insects was very small indeed and it was not found necessary to use insecticides against the cutworm. The wire worm, however, gave some trouble, making it necessary to replace from 5 to 7 per cent of the plants.

The varieties grown at Farnham in 1919 were the following:—

A selection of Cuban.
A selection of San Felix.
Two selections of Yamaska, No. 1095-4 and No. 2011.

Growth was slow during the latter part of June and especially slow during July, which was very dry and rather cold, but in August, conditions improved very rapidly. Light but frequent showers enabled the plants to develop very completely. The crop was harvested before September 15th.

For the first time there was obtained from a selection of Cuban grown in Canada a satisfactory weight of crop. The average shows good plots going above 1,600 pounds per acre. As to the Brazil, which was especially studied with a view to the production of aromatic plant, the yield was less encouraging, scarcely coming up to 1,150 pounds per acre. The Yamaska No. 1095-4 gave 1,400 pounds. The Yamaska No. 2011 gave over 1,600 pounds. Under these conditions the growing of the last-named might prove profitable, in spite of the fact that the proportion of leaves large enough for wrappers is not as great as in the case of the Comstock Spanish. The great difficulty found with the Yamaska on the plantation is the fragility of the leaf and its rapidity of ripening. This latter feature makes it necessary to gather the crop very quickly if loss is to be avoided.

Tests of Commercial Fertilizers.

A very complete test of commercial fertilizers was carried on in 1919, covering 30 plots. These had been manured in the autumn of 1918 at the rate of eight or nine tons per acre. On the plots, besides the commercial fertilizers generally employed, the tobacco grower tried ground bone, linseed meal, cotton-seed meal, fish scrap and tobacco stems. Twelve of the plots were treated with ground limestone, slack-lime and quick-lime. In every case the use of the fertilizer showed a profit. The lime, taken altogether, did not show the results we had expected.

Tobacco Diseases.

The effort to control and eradicate the root rot in tobacco (*Thielavia Basicola*) undertaken under the direction of the Tobacco Division was continued, and up to the present, the disinfection of the soil of the seed beds, either by steam or formalin, and th adoption of rotations not including plants on the roots of which the *Thielavia basicola* can flourish, are the only methods which have been found effective. It is hoped to publish shortly the results of the experiments carried on during the last four years in this direction.

As to mosaic, as well as to tobacco root rot, certain varieties have shown themselves particularly resistant, while others have been shown themselves especially liable to it. This seems to indicate the possibility of isolating strains of tobacco resistant to the disease. At any rate, an attempt will be made in this direction.

The work of selection of a type or types of White Burley resistant to root rot made good progress during the year. On the Harrow Station we were able to isolate, in using seed furnished by Mr. Johnson, of the Experimental Station of Wisconsin, a strain of White Burley Resistant which gave a yield equal to that of the ordinary Burley Broad Leaf. It also seems that there is good hope of obtaining the same result with a White Burley cross coming from a cross of White Burley with a variety of tobacco naturally resistant to this disease.

Co-operative Work with Fertilizers

This work carried on in co-operation with a certain number of Ontario tobacco growers was continued in 1919. It has been found to be one of the best means of teaching the method of using commercial fertilizers. In every case the results have been most favourable. The weight of the crop has been considerably increased and also the money yield therefrom.

This co-operative work was conducted on a still wider basis by the Superintendent of the Farnham Tobacco Station and the same favourable results were obtained. It is hoped to publish the results of this work in the near future.

A test of lime was carried out on an acid soil but it did not give the results expected. One might have hoped at least on a soil rich in humus for a marked increase in weight of crop and better development of the plant, but neither result was obtained in 1919.

The study of tobacco soils in Canada was continued as far as time would permit. From the work so far done it is now hoped to be able to judge fairly closely the kind of soil best suited to each of the types of tobacco grown in Canada.

The examination of the soils of Norfolk, Ont., indicates that this district is sure to become a very important tobacco growing centre which will be able to specialize in the production of yellow flue-cured tobacco of the Virginia type. As in previous years the Tobacco Division gathered statistics as to the total crop grown in Ontario. The production of Yellow Virginia type amounted to some one million five hundred thousand pounds and about ten million of White Burley was grown.

CENTRAL EXPERIMENTAL FARM, OTTAWA

The experimental area at the Central Farm was devoted in 1919 to the production of seed of Comstock Spanish, Canelle, and Little Havana. A special endeavour was made to prepare for the expected increase in demand for seed of Comstock Spanish, owing to the high price paid for tobacco of this variety during the preceding year. The harvest of seed was good as a whole, in spite of the fact that growth had been considerably held back by the drouth and cold nights of the month of June.

WAREHOUSE

As heretofore the tobaccos grown on the Quebec Farm and the Central Farm were all treated in the warehouse at Ottawa. Some difficulty was experienced owing to lack of help but the work was carried on without special incident. The fermentation of Yamaska of Farnham was particularly successful. The Brazil did not give quite so good results. The curing of these tobaccos was unsatisfactory and their fermentation was difficult. It is very likely that this arose from the presence of a disease affecting the leaf tissues but which had not been noticed during the growing season.

DIVISION OF BEES

REPORT OF THE APIARIST, F. W. L. SLADEN

The work of the Bee Division during the year may be divided into (1) General Work. (2) Special Experiments.

Under General Work is included the maintenance of the Central Farm apiary at Ottawa, a summer out-apiary in connection therewith, and apiaries at fifteen of the Branch Farms; correspondence; interviewing and giving advice to visitors; cooperative experiments with private beekeepers in certain little-known and promising localities; the issue of press articles on timely subjects giving the results of experiments; exhibition work, etc.

The season of 1919 was favourable for the production of clover honey at the Central Experimental Farm, where from 38 colonies there was an average production of 200 pounds to the colony, bringing the annual average production per colony during the last seven years up to 134 pounds.

Lethbridge produced an equivalent of 213 pounds to the colony, mainly from alfalfa, bringing the average annual production for the past six years up to 99 pounds. Other Branch Farms that scored high yields in 1919 were Invermere, B.C., 127 pounds to the colony; Kentville, N.S., 122 pounds to the colony; and Sidney, B.C., 109 pounds to the colony.

Under Special Experiments are included several promising lines of investigation that have been singled out for progressive work.

1. Management experiments; particularly the study of methods of (*a*) reducing the labour incidental to controlling swarming, and (*b*) increasing honey production by utilizing the very favourable conditions for breeding up in the spring in many parts of Canada (particularly at Ottawa, where the chief experiments were carried on). A system of management that was devised in 1918 was tested and further developed and was found to reduce labour and increase the number of bees raised to work on the clover so that a larger return of honey was obtained per colony with less labour than by the methods generally employed.

2. A breeding experiment. In July, queens and drones were taken in sixteen nuclei to Duck island, at the eastern end of lake Ontario, where complete isolation for mating purposes was found to exist. The results have been of considerable scientific interest and have indicated that this is likely to be a satisfactory place for studying isolated mating which appears to be essential for the maintenance of any definite work in breeding bees for improvement.

3. Investigation of northern conditions at the Experimental Station at Kapuskasing, Ont. As a result of preliminary experiments with bees at Kapuskasing made by the writer during July, 1918, two colonies were sent there from Ottawa early in August, 1919. When visited on September 11 and 12, it was found that they were doing very well, having gathered a large quantity of honey from alsike and white clover, fireweed, and *Aster macrophyllus*. Plans were made for extending the bee experiment work here.

4. An experiment to ascertain the actual value of honey bees in the production of apples in Nova Scotia has been undertaken at the Experimental Station at Kentville. By request, an address was given on this subject at the Annual Convention of the Nova Scotia Fruit Growers' Association, held at Kentville in January.

DIVISION OF ECONOMIC FIBRE PRODUCTION

REPORT OF THE FIBRE SPECIALIST, R. J. HUTCHINSON

Owing to the necessity of devoting a very large proportion of time to the production of "pure line seed" in a commercial way, the division found it impossible to proceed with much of its usual work.

Variety Tests.—During the year a total of eleven acres, including seven varieties of seed, were tested at the Central Experimental Farm.

Th following table will show the average yield per acre of scutched fibre:—

Variety of seed	Germination of seed	Plot	Yield of scutched fibre	Grades
Long Stem	95	1-10 of an acre	468 pounds	No. 3
Ontario Dutch Child	94	1-10 of an acre	344 pounds	No. 3
Imported Dutch	91	1-10 of an acre	406½ pounds	No. 1
Indian Head Long Stem	93	1-10 of an acre	204 pounds	No. 4
Japanese Siberian	95	1-10 of an acre	307 pounds	No. 2
Dutch White Flowering	97	1-10 of an acre	364 pounds	No. 1
Imported English	82	1-10 of an acre	214 pounds	No. 5

From the striking uniformity of the flax straw produced from each of the pure line seeds as compared with that grown from any of the commercial varieties, and from the results of the trials, it is certainly evident that the flax crop can be greatly improved, through the propagation of pure line seed from selected plants.

Flax Tests.—Approximately nineteen acres of flax in plots ranging from one-tenth to one acre in size, were grown in different districts throughout Canada. Owing to the dry spell, during the growing season, the flax was so extremely short as to render it useless for scutching purposes.

Prairie Flax Straw.—The experiments to determine the possibilities of recovering and utilizing the straw from flax grown for seed production have been completed. The fibre obtained was chemically treated in specially prepared vats by a fermentative process, which required only a few hours. After thus being treated the fibre was shipped to Doon Twines, Limited, Kitchener, Ont., where it was carded and manufactured into binder twine.

The twine has not been tested sufficiently under field conditions to justify a pronounced statement. It was approximately two lea yarn, twisted four-ply, running about 650 feet to the pound. Commercial twine and rope were also made, but no conclusions regarding their value have been established.

The waste material from the carding operations was found useful for felting purposes, and when mixed with 20 per cent of cow hair, it can be used for insulation. The binder twine was manufactured at a cost of approximately 13½ cents per pound and the commercial twines at 20½ cents per pound.

Seed Inspection.—In order to safeguard the export trade to Ireland, through the maintenance of a uniform standard of high quality seed, the Federal Department of Agriculture made provision for an inspection and grading service for the flax seed crop of 1919. It may be expected that for years to come Ontario seed will come into keen competition with Japanese, Dutch and Russian seeds, and unless Ontario can insure the Irish trade with the quality of seed that will compare at least favourably with that from other countries mentioned, it will be much handicapped in maintaining a market.

Flax Scutching.—Bad scutching not only lowers the value of the flax, but increases the output of tow. The whole aim in flax production is to obtain a maximum of flax fibre with a minimum of tow.

A new method of flax scutching which has been put into operation, and which is suitable for Canadian conditions, is for the scutchers to work in pairs at adjoining stocks. One is the learner doing the rough scutching (which is called buffing) and then passing the head of flax to the skilled worker, who completes the final cleaning.

Grading.—The system of flax grading, which was started in the year 1918 is working very satisfactorily.

Flax Pulling Machines.—Several commercial flax pulling machines have been made of different designs. At least one machine of Canadian invention, of the belt pulling type, has been proven in various trials to be a commercial success.

With the approval of the Director, Experimental Farms, ten weeks were spent in various parts of the flax growing districts in Ireland to investigate the seed and fibre market.

DIVISION OF CHEMISTRY

REPORT OF THE DOMINION CHEMIST,

FRANK T. SHUTT, M.A., D.Sc., F.I.C.

EDUCATIONAL AND ADVISORY WORK

It may be regarded as an encouraging and hopeful sign for the future of Canadian agriculture that our farmers year by year in increasing numbers are educating themselves in the principles which underlie economic and rational farming. One means of so doing is by taking advantage of the offer of information and advice, in matters in which the science of chemistry can render assistance—in the treatment of various

types of soils, in the care and use of manure, in the application of fertilizers, in the economic employment of fodders and commercial feeding stuffs, in the preparation of insecticides and fungicides and in many other and closely allied every-day practical problems of the farm.

The policy of constituting the division a bureau of information in respect to what might be termed the "chemistry of the farm," inaugurated in the very earliest days of the history of the Experimental Farm System, has proven one of great practical service. It has been continued and developed with increasing importance and value to the country. It received an impetus in the early months of the late war from the institution of the special campaign for the greater production of food stuffs, and the wider interest that spread throughout the Dominion in matters pertaining to better and more profitable farming practice has not materially diminished in these later days of peace.

This branch of our work—the correspondence—therefore becomes year by year more important, entailing more and more thought and labour and consuming more time, but we feel that it is one which in the present stage of our agricultural history and development must be regarded as an important phase of our activities, accomplishing much for the present and still more for the future.

SAMPLES RECEIVED FOR ANALYSIS

The total number of samples received for analysis during the past year was 7,643. These samples, for the most part, fall into four large groups: (1) samples collected in connection with the investigations carried on by the division; (2) samples sent in by farmers for examination as to nature, value, etc.; (3) samples submitted by the Meat and Canned Foods Division of the Health of Animals Branch; and (4) samples of flour forwarded for analysis as to moisture content by the Wheat Export Company (agents of the Allied Governments) and the Canadian Wheat Board. A more detailed classification of these samples is submitted in the subjoined table:

SAMPLES RECEIVED FOR EXAMINATION AND REPORT DURING THE TWELVE MONTHS ENDING MARCH 31, 1920.

Samples	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	Total
Soils	45	611	16	5	63	56	8	2	....	802
Muds, mucks and marls	1	....	....	....	2	5	5	1	....	14
Manures and naturally-occurring fertilizers	15	1	1	1	19	43	18	6	2	106
Feeding stuffs and fodders, including forage plants, seeds, etc.	13	9	11	5	367	60	18	7	7	497
Waters, including rain and snow	7	23	25	9	179	25	6	5	1	280
Samples from Meat and Canned Foods Division	....	....	....	....	....	....	....	....	....	1,809
Miscellaneous, including dairy products, fungicides, insecticides, etc.	12	9	18	8	114	44	3	6	3	219
Flours, for Allied Governments	....	....	....	....	....	....	....	....	....	3,916
										7,643

EXAMINATION OF SOILS FOR FARMERS

Soil samples, in considerable numbers, have been sent in by farmers from many widely distant points in the Dominion. Without submitting these to complete analysis, which, in the majority of instances, would be quite unnecessary, a sufficiency of chemical and physical work is done upon them to determine their nature and condition to permit of a report of a suggestive and helpful character as to their treatment. The chief points upon which information is furnished in connection with this work are drainage, cultivation, manures and fertilizers, liming, alkali content and suitable crops.

As certain information respecting present drainage, the history of the soil as to past cropping and manuring, etc., is necessary to the satisfactory interpretation of our results, a special "form" giving directions as to the collection of the sample and containing questions to be answered by the sender on the above mentioned matters, is issued. The form is obtainable free upon application to the Division.

INVESTIGATIONAL WORK WITH FERTILIZERS

Experimental work with fertilizers has been carried on during the season of 1919, on the Farms and Stations of the System, as follows: Charlottetown, P.E.I., Kentville, N.S., Fredericton, N.B., Cap Rouge, Que., Ottawa, Ont., Brandon, Man., Indian Head, Sask., Lacombe, Alta., Invermere and Summerland, B.C.

Experiment Plan "E".—The details of this plan were given in our report of last year; it may therefore be only necessary to state that this scheme has for its primary object the determination of the most profitable combination and quantity of a fertilizer mixture throughout a three-year-crop rotation consisting of: 1st year, hoed crop; 2nd year, grain; 3rd year, hay.

This experiment is of a comprehensive character, permitting the study of the influence of nitrogen, phosphoric acid and potash, as furnished by fertilizer materials, separately and in several combinations and proportions. It also includes the application of barnyard manure, alone and with fertilizers, and the effect of liming. The plan calls for from 60 to 75 plots and was commenced in 1918 at Charlottetown, P.E.I., Kentville, N.S., Fredericton, N.B., Cap Rouge, Que., and Agassiz, B.C. The season of 1919 constitutes the second in the rotation.

Any detailed statement of the results of the season obtained at the several points of experiment would be too voluminous for this report and, further, general deductions must be left until the rotation is completed, but certain inferences at this stage appear warrantable.

The fertilizer and manure applications were made in the first year of the rotation, on the hoed crop. On certain of the plots in the second year (grain) a dressing of nitrate of soda was given. In the majority of instances these latter plots gave a decidedly larger yield of grain and straw, as compared with those which did not receive nitrate. The conclusion seems warranted that on poor soils an application at seeding time of nitrate of soda, say of 100 to 150 pounds per acre, for grain will be a profitable practice.

It is also evident from a study of the results that a complete fertilizer, i.e., one containing nitrogen, phosphoric acid and potash, will give on most cultivated soils which are not in a high state of fertility, a larger and more remunerative yield than one containing any single element of plant food.

Further, it is apparent that for the most profitable results, the soil, especially if it be poor in humus, must receive some manure. Fertilizers are much more effective and profitable if associated with manure applications than when used alone, and it may also be stated, more profitable returns have been obtained in a large number of cases from this plan than from heavy manurial dressings without fertilizers.

In the Maritime provinces generally and in Quebec the influence of liming has been marked. As an example the results obtained at Kentville, N.S., may be cited:—

Hay—

Average of limed plots	4,786	pounds per acre.
Average of unlimed plots	3,045	" "
Largest yield of limed plots	5,070	" "
Largest yield of unlimed plots	3,080	" "

There is much additional evidence to show that many lands in Eastern Canada may be profitably treated with lime or ground limestone.

Influence of Phosphoric Acid on Yield and Maturity.—The influence of phosphoric acid (400 pounds of superphosphate per acre) on the yield and date of ripening of corn was tested at Cap Rouge, Que., Brandon, Man., and Indian Head, Sask.

Careful observations failed to reveal any hastening of the maturing of the crop due to the application of superphosphate, and there were no marked increases in yield due to the fertilizer, though as regards the latter statement it should be remarked that the plots at Cap Rouge had received manure at the rate of 20 tons per acre and the soils at Brandon and Indian Head were rich and fertile.

At the Central Farm, Ottawa, an experiment has been in course for the past two years to ascertain the relative values of nitrogen, phosphoric acid and potash as furnished by the several forms on the market. Thus, for nitrogen, nitrate of soda, sulphate of ammonia, cyanamide and dried blood were employed; for phosphoric acid, superphosphate, untreated phosphate rock and basic slag; for potash, muriate of potash, Nebraska potash, nepheline syenite, Drury's potash. The crop used is potatoes and the season was a poor one for large yields.

Many erratic results were obtained, owing to unevenness of soil, and it would therefore be unwise to draw final conclusions, but a few of the more outstanding results may be given with the proviso that they are merely one year's findings and to be considered as tentative only.

The maximum yield in the nitrogen group was obtained from the plot receiving nitrate of soda 115 pounds and dried blood 150 pounds per acre, with superphosphate and muriate of potash.

In the phosphoric acid group, the maximum yield was from the basic slag 685 pounds per acre, with nitrate of soda and muriate of potash.

In the potash group, the maximum yield was from the plot receiving Nebraska potash (sulphate) 200 pounds with nitrate of soda and superphosphate.

The best yields in the whole three series were obtained on the plots receiving nitrogen in one or other of the forms employed, which may be taken as indicating that nitrogen is the limiting element or the element chiefly deficient in the soil of the experimental area.

FERTILIZER MATERIALS AND AMENDMENTS

Limestone.—The wide interest that has been taken in the application of lime compounds, more especially ground limestone, during the past five years may be regarded as indicating a notable step forward in Canadian field husbandry. The evidence that has accumulated, more particularly from Eastern Canada, is most satisfactory and encouraging. We feel assured that it is a practice that is bound to become a permanent feature in our soil treatment, not generally necessary throughout the whole Dominion, but more especially beneficial in districts under humid conditions and in which cultivation and cropping have long been practised on soils naturally poor in lime.

During the year the Division has analysed and reported on a number of limestones, forwarded for the purpose of learning if they were rich enough for the purpose

of manufacturing ground limestone. The larger number were submitted by the Provincial Department of Agriculture of New Brunswick, and the results, as in previous years, showed that many excellent limestone deposits occur in that province.

Analysis of Limestones, 1919

Laboratory No.	Locality	Mineral Matter insoluble in acid	Oxide of Iron and Alumina	Carbonate of Lime	Carbonate of Magnesia
43491	J. H. Havelock, N.B.	4·10	0·84	94·79	
45146	A. S. Edgwood, B.C.	16·54	2·68	78·70	
45252	J. B. Chatham, N.B.	1·80	1·30	59·89	37·86
45253	J. B. Chatham, N.B.	4·04	0·80	94·55	
46369	J. G. Edmundston, N.B.	43·40	6·00	45·04	
47896	A. W. C., Dorchester, N.B.	10·44	2·24	56·00	30·51
49602	J. H. G., Three Rivers, Que	57·10	9·75	25·94	5·45
50080	M.D., Restigouche, N.B.	49·55	3·09	45·69	
50296	E.P.B., Upper Kent, N.B.	21·48	2·99	66·09	
50340	E.L., Mont Joli, Que.	43·03	2·06	50·00	
50433	J.N.B., Nashe's Creek, N.B.	41·09	1·52	56·30	
50434	J.N.B., Nashe's Creek, N.B.	1·66	0·31	98·30	
50673	E.L., Mont Joli, Que.	20·73	1·85	76·50	
44293	A.W.S., Kingston, Ont.	5·70	2·27	89·02	
46995	G.A.L., Sherbrooke, Que.	3·42	0·38	94·79	
48248	G.A.L., Quebec, Que.	0·92	0·78	97·21	
47093	G.A.L., Quebec, Que.	1·14	1·10	97·32	
47000	G.A.L., Quebec, Que.	0·76	0·84	98·01	
46230	A.J.A., Okanagan Mission, B.C.	0·30	0·10	94·05	
46288	A.J.C., Kaslo, B.C.	3·08	0·90	93·68	
47094	G.A.L., Quebec, Que.	0·88	1·00	98·21	
47589	G.A.L., Quebec, Que.	0·64	0·72	98·18	
49638	J.H.G., Three Rivers, Que.	4·35	1·05	93·62	

The outstanding functions of lime (including the forms slaked lime, ground limestone and marl) may be briefly stated as follows: the correction or neutralization of soil acidity, commonly known as sourness—a property more or less injurious to the growth of most farm crops; the furnishing of an important element of plant food; the improvement of the tilth and structure of many types of soils and especially of heavy clay loams, making them more retentive of moisture, more readily drained and more easily worked and better adapted to the extension of the crop's root system; the promotion of conditions favourable to the development of those microscopic organisms within the soil which play so important a part in the preparation of crop food from inert soil material and by encouraging the growth of clover in adding available nitrogen to the soil from the free and otherwise unavailable store of that element in the atmosphere.

Marl.—Marl is essentially carbonate of lime. It is a form eminently adapted for agricultural use, being soft, friable and easily reduced to a powder when air-dried. Its preparation and application are simple and its results are fully equal to those of ground limestone. As a naturally occurring amendment its value has not yet been fully realized.

Deposits of marl, usually associated with swamp muck, are found in many parts of Canada. As might be expected, it is variable in composition. There are marls in the air-dried condition which contain 90 per cent and over of carbonate of lime, others, due to admixture with clay, organic matter, etc., in which the carbonate of lime content may be from 25 to 50 per cent also occur—hence the value of a chemical analysis.

The larger number of marls analysed during the past year, as will be seen from the following table, were of excellent quality.

ANALYSIS OF MARLS (AIR-DRIED) 1919.

Laboratory No.	Locality	Mineral matter insoluble in acid	Oxide of iron and alumina	Carbonate of lime	Moisture, organic matter, etc. (undetermined)
44316	A.E., Kimberley, B.C.	22·69	2·38	57·67	15·34
43490	P.L., Maple Green, N.B.	6·44	1·12	80·19	12·25
44605	C.C., Dixville, Que.	14·80	.....	60·39	24·81
44606	C.C., Dixville, Que.	2·30	.....	85·38	12·32
44607	C.C., Dixville, Que.	2·06	.....	86·38	11·56
44608	C.C., Dixville, Que.	2·40	.....	84·64	12·96
44609	C.C., Dixville, Que.	1·04	.....	87·12	11·84
44610	C.C., Dixville, Que.	2·56	.....	83·90	13·54
45463	T.S., Salmon Arm, B.C.	3·46	1·02	89·22	6·30
48722	E.P.B., Fredericton, N.B.	8·85	0·94	81·81	8·40
48723	E.P.B., Fredericton, N.B.	2·55	0·40	86·49	10·56
48963	N.P., Kelowna, B.C.	0·48	0·10	90·44	8·98
49247	S.B., Benton Landing, B.C.	7·27	1·50	61·75	29·48
49365	R.H., Apple Hill, Ont.	6·88	1·13	70·10	21·89
50305	C.J.P., Clinton, B.C.	9·04	1·19	66·56	20·90
50306	C.J.P., Clinton, B.C.	10·83	1·63	71·00	14·47
50454	Wm. E., Victoria, B.C.	5·50	0·50	84·50	9·50
50489	V.C., Maria, Que.	2·44	0·40	94·00	3·16
50490	H.B., Montreal, Que.	0·39	0·22	91·00	8·39

Agricultural Lime.—This material is now to be found on the market. It should always be purchased on guaranteed analysis, as a considerable difference in lime content may be met with in the various brands offered for sale. The three samples analysed all showed high percentages of quick lime.

LIME, 1919

Laboratory No.	Manufacturer	Insoluble Residue	Oxide of Iron and Alumina	Carbonate of Lime	Undetermined
46994	Dominion Lime Co.	1·36	2·54	87·25	1·59.
47092	F. Carnac Marquis.	0·40	1·94	90·60	
48249	Dominion Lime Co.	0·32	2·06	81·84	3·28

Tobacco Products.—The waste of by-products of the tobacco factory—dust, stems, etc.—possess a distinct though variable fertilizer and insecticidal value. Potash and nitrogen are their chief elements of plant food and when purchased for manurial purposes an analysis showing the percentages present should be obtained. The poorer materials, e.g. tobacco dust, frequently contain large amounts of sand. The variability in composition and hence the difference in value of these by-products may be observed from the following analyses made during the past year:—

WASTE PRODUCTS FROM THE TOBACCO FACTORY

Laboratory No.	——	Moisture	Ash	Loss on Ignition	Insoluble Residue	Phosphoric Acid P_2O_5	Potash K_2O	Nitrogen
50298	Tobacco dust No. 1.	2·29	76·30	21·41	70·57	0·12	0·65	0·59
50299	Tobacco dust No. 2.	4·25	44·57	51·18	34·75	0·40	1·62	1·39
50300	Tobacco dust No. 3.	3·17	63·44	33·39	55·20	0·19	1·07	0·89
50301	Cigarette Stems.	7·87	18·53	73·60	0·55	0·63	4·49	1·04
50302	Burley Stems.	7·03	22·56	70·41	0·38	0·92	7·69	2·89
50303	B. E. Stems.	7·45	22·57	69·98	0·43	0·52	7·60	1·47
50632	Tobacco Dust.	1·97	15·11	78·40	.....	.....	.....	0·43

Miscellaneous.—Among the various materials having fertilizing value analysed during the year were wood and mill ashes, incinerator ashes, Nebrask potash, California potash, "basic slag with potash", bracken, decayed seaweed, fish wastes, guano, gypsum, "tomato slush" from cannery, mucks, pond and river muds. Many of these natural deposits and waste products have been treated of in previous reports; lack of space unfortunately prevents their detailed discussion here.

CLASSIFICATION OF IRRIGABLE LANDS

The chemical and physical examination of soils in connection with the classification of lands in irrigable areas in southern Alberta and southwestern Saskatchewan, commenced in 1913, has been continued. This work was undertaken for and is reported to the Reclamation Service, Department of the Interior. It has had for its chief object the determination of "alkali" in suspected areas, the data obtained permitting the classification of the lands involved into irrigable and non-irrigable from the standpoint of possible future injury due to rise of alkali under irrigation. During the year 128 soil samples, comprising 32 groups, have been analysed and the areas involved reported on as to suitability for cultivation under irrigation.

Several investigations are being carried on in connection with alkali problems, e.g., the alkali content of soils as related to crop growth, the vertical movement of alkali under the influence of irrigation, etc., and interesting and valuable data thereon have been obtained from the past year's work in field and laboratory.

The detailed analysis of a number of waters from artesian wells in southern Alberta has been made, with a view of determining the suitability of these waters for irrigation, provided they were in sufficient volume in any case to permit of their employment for this purpose. Our report shows that the waters examined were all more or less saline and not safe or suitable for irrigation, though in limited quantities and occasionally applied, certain of them might be used for a time on soils with good drainage without marked injury.

The most recent phase of our work for this branch of the Department of the Interior has been the examination of soils from areas in the northwestern provinces under consideration for reclamation by drainage. This is not simply an alkali problem but a determination of the nature and quality of the soil, so that a decision may be reached as to the practical farming value of the land if the area involved were reclaimed by drainage.

CHEMICAL INVESTIGATIONS IN POULTRY HUSBANDRY

Poultry husbandry as well as all other branches of animal husbandry has numerous problems, the solution of which lies in the application of the theories and principles of chemistry. For this reason and the increasing importance of the poultry industry the services of a chemist were placed at the disposal of the Poultry Division of the Central Farm and during the past year a beginning has been made on several lines of investigational work.

Incubation.—The losses suffered by the farmers and poultrymen of Canada due to poor results in incubation amount to millions of dollars annually. It is generally believed that the purity of the air and its moisture content in the incubator materially affect the vitality of the developing embryo. To determine conditions existing in the incubators used by the Poultry Division the air in all the machines was analysed. The air in a 10,800-egg Buckeye incubator, in use for the first time, was found to have a moisture content of 0·618 per cent and carbon dioxide content of 0·350 per cent at the top where the eggs were less than seven days old, while at the bottom or hottest part where the eggs were between 14 and 18 days in the incubator, the moisture

content was 0·532 per cent and the carbon dioxide content was 0·227 per cent. A 350-egg Buckeye incubator and a 150-egg Cypher's incubator in use in the same cellar at the same time showed moisture contents of 0·896 and 0·940 per cent and carbon dioxide contents of 0·206 and 0·252 per cent.

To study this question in detail a special incubator designed to meet the needs of a strictly scientific investigation, i.e., control of the various factors, temperature, humidity, etc., was built. Preliminary tests seem to indicate that this machine will prove satisfactory. A detailed description and results obtained will be given when further work has been carried out.

Nutrition.—The study of the nutrition of poultry has not advanced to the same degree as for other classes of live stock, and coefficients of digestibility and the protein and calorific requirements per diem for poultry have only been determined in a few instances. As a first step in this study, a feeding experiment on chickens was carried out. Twelve pens of forty-two chickens each were fed for a five-week period and weekly gain in weight and the mortality noted. The basal ration consisted of finely cracked corn, wheat and oats and finely-ground bran, shorts and cornmeal. Pen No. 1 received the basal ration only, the rations in the other pens being supplemented by one or more feeds, e.g., greens, eggs, meat and milk. Pen No. 1, the poorest, lost 31 birds and the survivors made an average gain of only 1·67 ounces. Pen No. 9, fed meat, eggs and greens in addition to the basal ration, suffered the lowest mortality, 4 birds or 10 per cent, and gained 5·26 ounces per bird, while in Pen No. 11, which had a ration similar to No. 9 but had milk to drink, the mortality was 7 birds but the gain of 5·87 per cent was the highest pen average. The relative value of these four feeds can be well shown by a comparison of the results when they were fed singly in addition to the basal ration. Pens 2, 3, 4 and 5 received meat, eggs, milk and greens respectively and the mortalities were 26, 18, 28 and 24 while the average gain per bird was 3·32, 3·44, 2·79 and 2·81 ounces. These figures clearly demonstrate the value of eggs as one of the first ingredients of food for young chicks.

Proposed Work.—The work begun in 1919 will be carried forward during 1920. Nutritional investigation work on chicks will be developed and extended to older fowl. The study of "watery" eggs and new laid eggs with "heavy" yolks, which the trade classify as extras rather than specials, with a corresponding lower price, will be investigated and special attention paid to the keeping qualities of these eggs in storage.

SUGAR BEETS FOR FACTORY PURPOSES

Eighteen years ago this division began the systematic testing out of approved varieties of sugar beets as to quality and yield and this investigation continued from year to year is now carried on, as far as the growth of the beets is concerned, on sixteen of the Farms, Stations and Substations of the System. By this means data of a reliable character are being amassed as to the suitability of soil and seasonal conditions for the successful growth of this crop at a number of widely-distant points throughout the Dominion.

For a long number of years the seed sown in this investigation was specially imported from Messrs. Vilmorin, Andrieux et Cie. Paris, France, the varieties being those with a high reputation for both sugar and yield. For the past three years Canadian grown seed has been largely used in this experiment and it is gratifying to record that in every respect the results have been as satisfactory as those from the best imported seed.

With one exception, Wohanka, imported from Russia, the seed sown last season (1919) was all grown in Canada, that denoted "Chatham" and "Waterloo" being Ontario grown, that designated as "British Columbian" being from the province of that name. All the seed used was obtained through the courtesy of the Dominion Sugar Co., Wallaceburg, Ont.

The varietal averages, as obtained from the results of the analyses of the beets grown at the sixteen points in the Dominion, in respect to sugar content, are as follows:—

VARIETIES OF SUGAR BEETS, 1919.

Source of Seed	Sugar in juice (average)	Coefficient of Purity (average)
Chatham (Ont.)	16·30	84·56
Wohanka (Russian)	17·17	85·49
Waterloo (Ont.)	17·34	80·92
British Columbia	17·71	85·89

These results are somewhat higher than those of 1918 and are to be regarded as indicating an exceedingly satisfactory root for sugar extraction. They furnish further proof that beets from home-grown seed may be fully equal in richness and purity to those from the best imported stock.

The detailed data in connection with this work are unfortunately too voluminous for this summarized report, but the following averages as obtained from the several averages will be of particular interest in showing at a glance the richness of the beets as grown at sixteen of the Farms and Stations of the System throughout the Dominion:—

AVERAGE PERCENTAGE OF SUGAR IN JUICE, 1919.

	Sugar in Juice Per cent
Charlottetown, P.E.I.	18.33
Kentville, N.S.	19.25
Nappan	18.83
Fredericton, N.B.	20.94
Lennoxville, Que.	15.91
Cap Rouge, Que.	16.88
Ste. Anne de la Pocatière, Que.	18.89
Le Ferme, Que.	16.05
Ottawa, Ont.	17.79
Scott, Sask.	14.39
Indian Head, Sask.	15.68
Lethbridge, Alta (Irrig.)	14.31
Fort Vermilion, Alta.	17.35
Agassiz, B.C.	17.02
Sidney, B.C.	17.98
Invermere, B.C.	14.72

The analytical and "yield" data of this investigation for the past eighteen years are now being carefully studied in relation to seasonal conditions—temperature, precipitation, etc. It is expected that this inquiry will indicate and more or less closely delimit those areas or districts in which, in so far as natural conditions are concerned, sugar beets might be successfully grown for sugar production.

FIELD ROOTS.

The object of this investigation, now in its fifteenth year, is the determination by chemical analysis of the relative nutritive or feeding value of the several varieties of mangels, turnips and carrots grown for stock use. The roots examined were grown on the Central Farm, Ottawa, by the Division of Forage Plants, and the laboratory determinations were dry matter, sugar in juice and the weight of root.

Mangels.—The series including eighty reputed varieties comprised eighty samples grown from seed obtained from 11 of the more important Canadian seed houses, and the varieties included all those types generally found upon the market.

It will only be possible in this report to present averages and the more important summaries.

MANGELS, 1919.

	Dry Matter Per cent	Sugar in Juice Per cent
Maximum	18.29	8.61
Minimum	8.42	3.46
Average of 80 varieties	12.58	6.26
Average for 15 years	11.13	5.76

The six varieties first in the series as to nutritive value, in the order of merit, are: Giant Yellow Oval, Mammoth Golden Giant, Giant Yellow Intermediate, Mammoth Long Red, Red Emperor and Gate Post. All these contained over 15 per cent of dry matter, with a sugar content ranging from 7·5 per cent to 8·5 per cent.

The following table epitomizes the more important data obtained in this investigation during the past 15 years:—

MANGELS—YIELD AND AVERAGE COMPOSITION, 1904–1919

Year	Number of varieties analysed	Average weight of One Root		Yield per acre		Dry Matter	Sugar
		lb.	oz.	tons	lb.	p.c.	p.c.
1904	10	2	11	30	1,277	11·69	6·62
1905	17	3	9	39	369	10·04	4·67
1906	16	2	7	31	159	11·63	5·93
1907	10	2	11	27	680	12·64	7·46
1908	12	2	2	23	690	11·87	5·33
1909	14	3	5	28	920	11·21	6·21
1910	8	5	10	56	57	10·04	4·46
1912	23	2	9	29	61	9·51	6·43
1913	13	2	14			10·51	5·63
1914	24	2	1	23	50	12·79	7·75
1915	36	3	9	36	1,157	9·25	4·27
1916	26	2	0	17	428	8·86	2·66
1917	31	1	15			12·64	6·72
1918	13	2	4			11·78	6·13
1919	80		14·37			12·58	6·26
Average for 15 years		2	11			11·13	5·76

Influence of Heredity in Mangels.—There are several distinct and well-recognized types of mangels and the evidence of this investigation, now in its twentieth year, clearly shows that well defined varieties possess and transmit, in a marked degree, characters as to quality or composition. In illustration of this fact the results of our analysis of the "Gate Post" and "Giant Yellow Globe," two very widely-grown varieties and representative of two distinct types, may be presented. In the following table the epitomized results of this investigation are given and it will be observed that throughout the whole period, without a single exception, the Gate Post has proved the superior variety.

DRY MATTER AND SUGAR IN GATE POST AND GIANT YELLOW GLOBE MANGELS

Season of Growth	Gate Post				Giant Yellow Globe			
	Average weight of one root		Dry Matter	Sugar in Juice	Average weight of one root		Dry Matter	Sugar in Juice
	lbs.	oz.	p.c.	p.c.	lb.	oz.	p.c.	p.c.
1900			11·14	6·15			8·19	2·64
1901	2	9	9·41	4·15	3	3	9·10	4·08
1902	3	2	13·90	9·39	3	9	10·24	5·24
1903	3	3	12·93	7·38	3	13	10·89	6·17
1904	2	14	12·64	7·62	2	13	9·24	5·26
1905	2	13	12·07	6·83	3	12	8·64	3·55
1906	2	2	12·90	6·59	1	8	12·73	6·45
1907	3	10	12·53	7·25	2	7	10·78	6·34
1908	1	11	12·02	4·94	2	4	10·66	4·47
1909	3	14	11·82	6·64	3	7	10·95	5·82
1910	6	8	9·59	4·26	6	13	7·80	2·74
1911	2	11	10·04	3·86	3	1	6·66	1·85
1912	3	5	8·98	5·05	3	2	7·87	4·75
1913	3	5	10·98	6·27	2	15	8·90	5·18
1914	2	11	14·40	8·00	2	1	11·16	6·32
1915	2	15	11·41	4·15	2	12	8·21	3·31
1916	1	10	9·79	4·07	1	9	8·68	3·17
1917	1	13	14·24	7·41	2	0	11·39	5·89
1918	2	8	12·87	7·22	2	44	9·73	2·84
1919		11	15·5	9·4		14	10·68	5·50
Average for 20 years	2	3	11·95	6·33	2	13	9·62	4·57

It is well known that the composition of mangels, in common with that of farm roots generally and sugar beets, is influenced by seasonal conditions, but the fact that the two varieties analysed in this series have been grown side by side under practically identical conditions of climate and soil gives to the above results a special significance. They furnish satisfactory proof that distinct varieties possess in a marked degree qualities due to heredity and capable of transmission.

Turnips.—Ninety-five samples of turnips were analysed, the series containing ninety-five reputed varieties obtained from nine Canadian seed houses. The varieties include both swedes and fall turnips.

The following table presents the averages for the past fourteen years:—

TURNIPS, YIELD AND AVERAGE COMPOSITION, 1905-1919.

Year	Number of Varieties Analysed	Average weight of One root		Yield per acre		Dry Matter	Sugar
		lb.	oz.	tons	lbs.	p.c.	p.c.
1905	20	2	13	30	1,060	10·09	1·10
1906	20	1	10	15	1,890	12·18	1·78
1907	14	3	5	33	142	10·14	1·11
1908	13	3	12	27	1,033	9·87	1·52
1909	13	2	10	29	542	11·30	1·43
1910	10	3	11	31	565	10·87	1·07
1912	19	3	12	33	155	8·65	1·10
1913	19	2	14	24	1,271	9·58	1·54
1914	30	2	0	22	130	9·68	0·76
1915	33	2	6	19	1,522	9·60	1·29
1916	33	1	13	16	681	10·67	0·92
1917	58	1	13			11·04	1·41
1918	16	1	3	10	869	11·18	1·06
1919	95		13·3			12·10	1·11
Average for 14 years		2	6			10·49	1·22

Lack of space forbids the inclusion of the detailed data of this work but two important conclusions therefrom may be stated as follows: (1) that turnips as a class contain somewhat less dry matter and considerably less sugar than mangels and (2) that the swede is decidedly richer both in dry matter and sugar than the fall turnips.

Carrots.—This series consisted of thirty-six samples, comprising thirty-six reputed varieties, obtained from nine Canadian seed houses.

CARROTS—YIELD AND AVERAGE COMPOSITION, 1905–1919

Year	Number of varieties Analysed	Average weight of one root		Yield per acre		Dry Matter	Sugar
		lb.	oz.	tons	lbs.	p.c.	p.c.
1905	11	1	3	25	1,510	10·25	2·52
1906	10	1	2	19	1,605	10·59	3·36
1907	6	1	1	24	1,517	10·30	3·02
1908	6	1	3	22	133	10·89	3·34
1909	6	1		17	1,680	10·40	2·30
1910	5	1	9	13	1,640	10·17	3·23
1912	6	1	1	18	545	10·50	2·54
1913	6		8	24	1,100	9·11	2·11
1914	8		10	21	1,359	11·42	2·62
1915	10		6	16	1,500	10·08	1·86
1916	10		7	11	1,140	11·40	2·87
1917	13		10			12·69	2·92
1918	3		6	31	266	12·13	5·30
1919	36		7·2			12·04	2·79
Average for 14 years			14			10·85	2·91

In nutritive value, as measured by dry matter and sugar, carrots as a class are superior to turnips; varietal differences, as in the case of mangels and of turnips, were quite marked, indicating the value of this work which permits the classification of the roots according to their nutritive value.

Speaking generally the season of 1919 was conducive to the development of a high quality of roots, which in both dry matter and sugar were above the average.

The summarized data of this investigation are presented in the following table:—

AVERAGE COMPOSITION OF MANGELS, TURNIPS AND CARROTS

Class of Roots	Average for period of	Dry Matter	Sugar
		p.c.	p.c.
Mangels	15 years	11·13	5·76
Turnips	14 years	10·49	1·22
Carrots	14 years	10·85	2·91

THE FERTILIZING VALUE OF RAIN AND SNOW

This investigation, begun in 1907, has had for its chief object the determination of the amount of available nitrogen furnished per acre per annum by the rain and snow, the collections and analyses being made at the Central Farm, Ottawa. Every fall of rain and snow throughout the year is measured and separately analysed. The latter point is an important one as the analysis of monthly composites, preserved by an antiseptic was found unreliable at the outset of the work.

The determinations in the laboratory are free ammonia, albuminoid ammonia and nitrogen in nitrates and nitrites, these three forms constituting the nitrogenous compounds in the precipitation capable of furnishing food for crops.

During the year ending February 29th, 1920, 79 samples of rain and 24 of snow were analysed.

The total precipitation of the year, March 1, 1919 to February 29, 1920, was 33.23 inches, consisting of 23.39 inches of rain and 98.5 of snow—10 inches of snow being considered as the equivalent of 1 inch of rain. The total nitrogen furnished by this precipitation amounted to 7.117 pounds per acre.

Many features of scientific interest have been brought out by this investigation, but it must suffice for this summarized report to insert here merely the important data from the agricultural point of view. These are presented in the following tabular form, together with similar data for comparison for the preceding two years and the average for the first decade of the investigation.

PRECIPITATION AND AMOUNTS OF NITROGEN FURNISHED BY RAIN AND SNOW

	Total precipitation in inches	Nitrogen		
		By rain lbs. per acre	By snow lbs. per acre	Total lbs. per acre
Year ending February 28th, 1918	32·86	4·719	1·540	6·259
Year ending February 28th, 1919	35·59	4·929	0·916	5·845
Year ending February 29th, 1920	33·23	5·909	1·208	7·117
Average for 10 years ending February 28th, 1917	33·17	5·482	1·101	6·583

While the total precipitation for the year closely approximates the normal—the average for the past 29 years being 33.68 inches—the amount of nitrogen furnished thereby is somewhat greater than the average obtained from the first ten years' work.

This investigation has shown that the precipitation in the neighbourhood of Ottawa furnishes approximately 6.5 pounds of nitrogen per acre usable as crop food, of which about 85 per cent, or roughly 5.5 pounds, is contributed by the rain. At a conservative estimate we may place the value of this plant food supplied per acre by the rain and snow at $1.75.

THE COMPOSITION OF WHEAT AS INFLUENCED BY SEASONAL CONDITIONS

This study, begun in 1908, has shown that climatic or seasonal conditions not only affect the yield but may profoundly modify the protein content of the grain. The plan of the investigation is simply to sow wheat from the same stock on the Farms and Stations of the Experimental Farm system, making careful weekly observations of the crop, weather, etc., throughout the season of growth. A sample of the harvested wheat from each of the plots is forwarded to the laboratories at Ottawa and analysed.

In this work, the Division is fortunate in having enlisted the co-operation of the Meteorological Service, which has undertaken the plotting, tabulation and correlation of the statistics and data.

Press of urgent work during the period of the war has made it necessary to defer the analysis of the wheat samples since 1916. These are now in course of analysis and as soon as completed the results will be correlated with the weather statistics. By this means the growth, yield and composition of grain may be studied as affected by environment.

The earlier results of this investigation indicated that the conditions conducive to a hard berry with a high gluten content, characteristic of wheat of high quality, are a moderately dry soil and fairly high temperatures during that period in which the kernel is filling out and maturing.

FEEDING STUFFS

As a result of war conditions not only has the price of all feeding stuffs greatly advanced but a large number of exceedingly poor feeds have been put on the market. This inferiority of quality or adulteration has been chiefly, but not entirely, found in chop feeds and feeds of an allied nature sold under proprietary names, and is due to the presence of mill waste and sweepings, oat hulls and weed seeds, many of which render the feed unpalatable and in cases dangerous to stock.

To ascertain the extent to which such inferior and dangerous feeds were on the market a special collection, comprising about 400 samples, was made throughout the Dominion. These have been submitted to chemical analysis as to nutritive value and, through the co-operation of the Seed Branch, to microscopical examination for the detection of noxious weed seeds and other foreign matter. This work is now completed and is being classified and tabulated for publication in bulletin form.

The widespread dissatisfaction that was felt with regard to the purity and quality of many feeds on the market has naturally led to numerous inquiries respecting feeding stuffs of all kinds, from farmers in various parts of the Dominion and more particularly from Ontario, Quebec and the Maritime provinces. In not a few instances claims have been made that the feed or feeds in question have been found unpalatable to stock or entirely refused even when diluted with other feeds of first-class quality. Other farmers have reported that certain feeds have proved of little nutritive value, the animals fed thereon showing marked lack of thrift; and again we have had cases presented to us of alleged fatal results from their use.

In the course of this work a considerable number of samples were sent in for examination. These included bran, shorts, middlings, feed flour, oat by-products, barley by-products, chop and mixed feeds of various kinds, gluten feed and corn by-products, special poultry feeds, oil cake meal, cotton seed meal and ground screenings.

Among the miscellaneous feeds analysed may be mentioned fish meal, beef meal, tankage, dried brewers grains, dried potato pulp, evaporated skim milk, dried carrots, sunflower seed, locust bean, cana-mola, refuse from the manufacture of ice cream cones.

Since it is impossible in this summary to discuss these feeds in detail it must suffice to indicate our findings in general terms.

It must first be stated that the results have indicated that the larger number of staple feeds, bran, shorts, middlings, feed flours, oil cake meal, etc., while naturally varying somewhat in composition according to the process of milling or manufacture, are practically free from sweepings, mill refuse, weed seeds or other foreign matter. A few of the samples of bran and shorts examined were of inferior quality, showing an objectionable admixture of sweepings and weed seeds, but such cases were exceptional. If the material is finely ground the detection of adulterants by mere inspection is frequently impossible, though, by tasting, the presence of certain of the unpalatable and noxious weed seeds may be detected. In such cases, however, a microscopical examination is necessary as supplemental to the chemical analysis. In this connection and by way of illustrating the value of microscopical work it may be stated that several cases of adulteration with cocoa shells in oil cake meal and pea hulls in chop feeds were detected.

Adulteration is most frequently found in the chops and mixed feeds, a number of which are put on the market under brand names. These need careful scrutiny, chemical and microscopical. Certain of them are unduly loaded with ground oat hulls—a fibrous and worthless product from the standpoint of nutritive value—while others have been found to contain large admixtures of objectionable weed seeds. This latter form of adulteration may not lower the percentages of the more valuable nutrients in the feed, indeed many weed seeds possess a higher protein and fat content

than the feed which they serve to adulterate. Their presence however is to be deprecated on the ground of making the feed unpalatable, less digestible and possibly directly poisonous.

Analysis has been made of a number of forages, among which the following list of silages stands out as notable: sunflower; Japanese millet; sweet clover; oat, pea and vetch; pea and corn; pea and corn refuse from cannery.

FLOUR

Shortly after the outbreak of the European war the Division was entrusted with the official examination of all flour purchased in Canada by the British War Office. This control work has been carried on continuously to date. The purchasing for military and civilian use overseas was taken over in 1917 by the Wheat Export Company, the Official Canadian Agents of the Allied Governments and more recently by the Canadian Wheat Board. During the year 3,916 samples of flour have been examined and reported on as to moisture content.

This control work has not only effected a very large pecuniary saving to the Empire and the Allies but has served to ensure, by keeping down the moisture content, the flour from spoiling during ocean transportation and storage. It has also undoubtedly been of value in maintaining and enhancing the reputation enjoyed overseas by Canadian flour for quality and strength.

PACKING HOUSE AND CANNERY PRODUCTS

An important phase of the laboratory work is the chemical control of the products of establishments—packing houses, canneries, etc.,—under the provisions of the Meat and Canned Foods and Oleomargarine Acts. This work which is necessarily of a very varied character is undertaken for the Meat and Canned Foods Division, Health of Animals Branch, Department of Agriculture and the results reported to the Veterinary Director General.

During the year 1919-1920 a total of 1,809 samples were submitted to chemical or microscopical examination. These are classified in the following table:—

Lards, tallows, oils, oleomargarines and butter	335
Preserved meats, sausages, mince meats, etc.	81
Pickling solutions	72
Spices and condiments	101
Evaporated apples, waste, etc.	648
Preservatives	36
Miscellaneous, including condensed milks	536
	1,809

A considerable amount of investigatory work has been done in connection with the examination of these samples, but it is impossible in this summary to enter into details. It must suffice to say that important results have been obtained in several lines and that this whole work of control has been carried out in as practical and thorough a manner as possible.

WATERS FROM FARM HOMESTEADS

The total number of waters from farm homesteads analysed during the year was 103. Of these 23 per cent were found to be pure and wholesome, 13 per cent suspicious and probably dangerous, 28 per cent seriously polluted, and 36 per cent too saline to be potable. Quite a number of samples received were too small for the purpose of a satisfactory analysis, and in this connection we would point out to those desirous of an analysis that they should first apply to the Division for an application form giving directions as to collection and shipment of the sample. No fee is charged for the analysis but the express charges must be prepaid.

An ample supply of pure water is one of the most valuable assets that a farm can possess and no reasonable expense should be spared to procure it. Pure water is one of the most potent factors which make for the good health of the farmer and his family, the thrift of his live stock and the quality and wholesomeness of his dairy products.

The cause of contamination in the larger number of instances is the access to the well of drainage of an excretal character, from stable, barnyard, privy, etc. Our records show that the polluted wells for the most part are shallow, merely collectors of soakage water from the surrounding soil, and located, for the sake of convenience, near the farm buildings in the barnyard, making contamination practically inevitable. It should be remembered that impure water of the character indicated is always a menace to health.

DIVISION OF BOTANY

REPORT OF THE ACTING DOMINION BOTANIST,

E. S. ARCHIBALD, B.A., B.S.A.

AMENDMENTS TO THE DESTRUCTIVE INSECT AND PEST ACT

By Order in Council passed April 4, subsection *f* of section 7 of the Destructive Insect and Pest Act relative to admitting currant and gooseberry plants from the state of New York into the province of Ontario, was amended, providing for the admission of said vegetation into the province of Ontario from the state of New York.

Section 12 of the same Act was amended April 4, prohibiting shipments of five-leaved pines, currant and gooseberry plants into Alberta and British Columbia from any other province of the Dominion.

By Order in Council passed on April 19, subsection *g* is added to section 7 of said Act, prohibiting the importation into Canada of certain species, hybrids and varieties of *Berberis* and *Odostemon* (Mahonia).

Section 12 of the same Act was amended April 19, prohibiting shipment of certain species, hybrids and varieties of *Berberis* and *Odostemon* (Mahoni) specified under subsection "*g*", section 7, into Manitoba, Saskatchewan and Alberta from any other province of the Dominion.

WHITE PINE BLISTER RUST

Scouting.—Surveys were conducted to learn the distribution of the blister rust fungus in northern Ontario. The rust fungus was found on the following number of properties: three out of forty-one in Simcoe county; three out of eleven in Muskoka district; not one out of twenty-one in Haliburton county; three out of thirty-two in Hastings county; twenty-five out of ninety-two in Renfrew county; not one out of seventeen in Temiskaming and Kenora districts. The scouting that was done in northwestern Ontario was not extensive enough to be conclusive that the fungus does not exist there.

Control Areas.—The establishment of four control areas begun in 1918 was completed in 1919 and a fifth area was laid out. The control areas are located as follows: Lincoln county, Ontario; Bowmanville, Ont.; Carillon, P.Q.; Berthierville, P.Q., and Lachute, P.Q. The object of the control areas is to determine the efficiency of removing all currants and gooseberries within the area, as well as those within five hundred yards of the control areas. Results will not be obtainable for a period of years.

The surveys of thirty-five pine woodland areas in the Niagara peninsula, around Oakville and in Simcoe county, conducted in 1918 and checked in 1919 have shown that:—

(*a*) While an average of about two per cent of the trees examined are infected, in a few cases as high as twenty to thirty per cent are infected.

(*b*) No increase in the number of diseased trees was found in 1919 over the number found in 1918.

POTATO INSPECTION SERVICE

The inspection service has been conducted from the central laboratories instead of from Charlottetown laboratory. This was found to be necessary in order to give the work the closest supervision possible.

The work is being continued along systematic lines with certain modifications aiming at an improvement of the service. The main difficulty arises from the use of temporary men, who lack experience, but every precaution is being taken to prevent the consequences arising from errors on their part. The work this season included the province of Alberta where much interest is being shown.

FIELD LABORATORIES

ST. CATHARINES, ONT.

The investigational work at the Laboratory of Plant Pathology at St. Catharines, Ont., the past year was interfered with by the fact that the officer in charge, Mr. W. A. McCubbin, resigned on June 1, and his successor, Dr. W. H. Rankin, formerly of the Plant Pathological Staff, Cornell University, was not appointed until October.

Brown Rot of Stone Fruits.—In continuation of certain surveys conducted in 1918 to determine the prevalence and importance of brown rot of stone fruits, similar surveys were conducted in 1919. These surveys included an apothecial survey, a blossom injury survey, and tabulations of the amount of loss on the trees, in the market and in cold storage. The most important points learned from these surveys are as follows. In peach orchards, not plowed, there were found an average of 5·44 apothecial clusters under each tree, while in orchards, spring plowed, an average of 1·44 clusters, and in orchards, fall plowed, an average of 1·93 clusters under each tree. In the case of plum orchards the difference was not so large. In orchards, not plowed, there were an average of 3·64 clusters under each tree, in orchards, spring plowed, 2·15 clusters, and in orchards, fall plowed, 1·22 clusters under each tree. The amount of blossom injury was found to range from 4 to 73 per cent for peaches, from 0·4 to 95 per cent for cherries, and from 0·0 to 94 per cent for plums. In seventy-five out of one hundred and twenty-two peach orchards examined, the blossoms injured by brown rot ranged from 10 to 30 per cent; in fifty-eight of eighty cherry orchards it ranged from 1 to 50 per cent, and in sixty-nine of the eighty-six plum orchards from 1 to 20 per cent. The amount of injury occasioned by brown rot at the time of maturity of the fruit was determined in forty-six orchards in the Niagara Peninsula to vary from 1·2 to 9·5 per cent.

Peach Canker Eradication by Surgery.—The experimental work on the eradication by surgery of the peach canker in a commercial orchard was continued in 1919. Results are to be tabulated after another season's work.

Raspberry Leaf Curl or Yellows.—An attempt was made to determine in two commercial plantations if the removal of the affected bushes was sufficient to check the spread of yellows or leaf curl. The results this season seem to indicate that it does not prevent the spread of this trouble, but no definite statement can be made until the work has been continued for a longer period.

New Projects Started.—The reorganization of the laboratory and field work under the new officer in charge was completed during the winter. Additional floor space is now available for the proper arrangement of the new laboratory equipment. The laboratory is now well equipped to carry out its functions in this district except that land and greenhouse facilities are not yet provided for. It is to be hoped that these necessary adjuncts to the laboratory will soon be forthcoming.

1. Leaf curl of raspberry. Investigations to determine the connection between true leaf-curl and the composite disease known as yellows. An effort is to be made to determine the specific cause of leaf curl and the manner of its transmission.

2. Canker of peach. Investigations to determine the cause or causes of peach canker and the relation between environmental and biotic conditions which determine its variations in prevalence and destructiveness.

3. Tests of spray mixtures and dusts on plums and cherries. A comparison of four liquid and dust schedules for the control of insects and diseases. This project is to be carried on in co-operation with the Entomological Branch.

4. Comparative tests of the more practical spraying and dusting schedules for apples on a commercial scale. This project is to be carried on in co-operation with the Entomological Branch and the Fruit Branch of the Ontario Department of Agriculture.

5. Comparative records on the results obtained in practice by growers in controlling fruit diseases with the object of determining the best control practices now in use.

6. Plant Disease. Survey. A determination of the losses due to the commoner diseases of cultivated plants in Southern Ontario, as a part of the general survey now being organized to include the entire Dominion.

7. A determination of the fundamental reactions of plants during infection and the development of diseases which it is hoped may aid in determining means for controlling the factor of susceptibility.

Several requests during the winter were acceded to for assistance on the programmes of institutes and agricultural organizations.

CHARLOTTETOWN, P.E.I.

The officer in charge, Mr. P. A. Murphy, left the Department to assume more remunerative work with the Department of Technical Instruction in Ireland.

Experiments and Laboratory Investigation on Potato Diseases.—The principal diseases dealt with were, early and late blight, leaf roll, mosaic, curly dwarf and similar diseases, wilt and powdery scab.

The results of previous years' work on late blight were amply verified by those obtained in the season just past. The year was a particularly favourable one for the spread of this disease and it was found that five sprays were necessary to control it instead of four, as formerly recommended. Experiments were continued on a larger scale than before to determine the way in which the disease spreads, special attention being taken of the relation of air and soil temperatures.

Experiments on the investigation of leaf roll and mosaic were continued which proved conclusively that both these diseases infect neighbouring healthy plants. Up to the present no casual organism has been found; insects which attack the vines are believed to be responsible, in part at least, for the spread of mosaic in the field, the same may also apply to leaf roll through the agency of soil insects. In the series of experiments carried out in collaboration with the Superintendents, at Charlottetown, Kentville, Nappan, Fredericton, Lennoxville, Ottawa, Brandon, Indian Head, and on a private farm at Fort William, Ont., it was found that climatic conditions have considerable influence in determining the amount of disease present. It was shown that diseased seed originally grown at Charlottetown developed little or no symptoms

of mosaic when planted at Brandon and Indian Head, but when the same seed was again returned to Charlottetown the disease proved to be as virulent as before.

Work was started to determine whether diseases of the curly dwarf type, which have been named temporarily "Crinkle and Leaf Drop," are communicable to healthy plants of the same variety in adjacent rows.

The investigations of wilt and powdery scab were continued as in previous years. Very little powdery scab was found in any of the plots, the corrosive sublimate treatment 1-2000 for three hours together with formalin 1-300 for three hours being the most effective.

Spraying Demonstrations.—Potato-spraying demonstrations were conducted on twenty farms in Prince Edward Island with a horse-power machine with excellent results, the farmers in every case being thoroughly satisfied and firmly convinced that spraying pays. Their remarks may be summed up in a few words: "Thorough spraying is the only means of growing a sound crop of potatoes." The amount of rot which developed in unsprayed portions of these fields ranged from 0.0 per cent in the resistant varieties up to 85 per cent in the susceptible varieties, while the sprayed plots resulted in an increased yield in every case, as well as a sound crop.

As a result of this work several machines are being purchased for next season's work, not only in the districts where the demonstrations were carried out, but also in others. Spraying is becoming more general every year.

FREDERICTON, N.B.

The investigational work conducted during the year 1919-20 consisted of a continuation of experiments previously started with a few additions, including field and cellar inspection of potatoes, potato spraying and dusting, leaf roll and mosaic diseases of potatoes, anthracnose of beans, bean mosaic, sclerotinia rot of beans, glume spot of wheat, turnip steckling rots, club-root of crucifers, and observations on other diseases occurring during the growing season.

Potato Spraying.—In conjunction with other pathologists a potato-spraying experiment consisting of thirty plots was conducted to determine the proper time for spraying, and the number of applications required to give the best returns. The period of commencement, the period between applications and the number of applications varied with each plot.

The largest returns and the least rot were obtained with five or more applications commencing when the plants were about eight inches high and continued at intervals of ten days. The increased yield from five or more sprays varied from 100 to 108 bushels per acre with from 25 to 28 bushels less rot per acre.

Bean Anthracnose.—This disease was not so severe this season as during the summer of 1918 and the results were consequently not so evident, but confirm in a large measure the results obtained last year. The work consisted of experiments on,—

(1) Seed selection.
(2) Seed treatment.
(3) Spraying.
(4) Resistant varieties.
(5) Seed from different sources.

Seed Selection and Seed Treatment.—While not serving as complete control measures, seed selection and seed treatment confirm the results of last year in that selected and treated seeds develop less disease than unselected or untreated seed. Moreover, the disease did not become pronounced until later in the season.

Spraying proved of considerable value but not a control measure. Serious injury to the foliage was produced by the first and second sprays; the injury caused probably equalled the beneficial effects produced by the spray. The spraying in some tests had to be discontinued on account of the injury.

Resistance of Different Varieties.—No varieties have been found immune and, in fact, the Well's Red Kidney Wax, which was practically free last year (one or two pods slightly spotted) developed considerable disease this year; some pods were badly injured.

Bean Mosaic.—The experiments on bean mosaic consisted of tests to determine:—

(1) Its presence or absence in commercial beans offered for seed purposes.
(2) To what extent the disease is hereditary.
(3) Its nature and methods of spreading.

These studies show that commercial stock may contain considerable quantities of mosaic infected seed, some lots developing as high as 23 per cent diseased plants before the disease commenced to spread in the field.

Heredity.—Seed obtained from diseased plants in Ontario (grown during 1918) when planted reproduced diseased plants to the extent of 43 per cent on first count; many diseased plants developing later. It was impossible to determine whether these later developments were from diseased seed or the result of infection from neighbouring plants in the field. Not all seed from diseased plants produced diseased progeny. The results obtained, however, undoubtedly proved that the disease is hereditary since seed grown in New Brunswick, and known to have been free from the disease the previous year, did not develop mosaic, except a few individual plants in rows adjacent to a diseased row and which developed late in the season. Two lots of seed, supposedly from healthy plants collected in Ontario were tested; one from Vineland proving to be free from the disease, while the one collected at Dutton from a diseased field showed a high percentage of infected plants.

Transmissibility.—The disease was transmitted from diseased to healthy plants by means of hypodermic injections with extracts from diseased leaves, and by pressing leaves of healthy plants between the fingers moistened with the extract from infected leaves, as high as 100 per cent infection being obtained by both methods.

GRAIN RESEARCH IN WESTERN CANADA

Work was carried on during the season of 1919 with headquarters at the University of Saskatchewan, Saskatoon, and field stations at Brandon and Indian Head.

Field and Laboratory experiments were undertaken to determine the life-history and method of control of the smut of western rye grass, which is more or less prevalent all over Western Canada. The experiments were successful and showed that this smut belongs to the seedling infection group and may readily be controlled by seed treatment, with a solution of formaldehyde as in the case of oat smut.

Experiments were also carried on to determine the injury to grains caused by treating with solutions of formaldehyde of various strengths. The seed was tested for germination at the Seed Branch Laboratory at Calgary. The results showed that practically no injury resulted from treatment with the solutions of formaldehyde commonly used. They, however, indicated that spraying with a strong solution of formaldehyde may seriously injure germination in wheat, especially if an excess of the solution is used. By field experiment at Indian Head, this dry method, as it is sometimes called, gave good control of oat smut and no evident injury to the seed.

There was a severe outbreak of stem rust in southern Manitoba and in parts of Saskatchewan, and great loss, especially of the later sown grain. Leaf rust of wheat has also been severe in some districts in Manitoba, but did little damage in comparison with the stem rust. Alberta was practically free from rust, until the grain was generally harvested.

Careful attention was given to the study of the overwintering and origin of spring infection of the stem rust, but without much result. It was found, however, that the summer spores of this rust may survive the winter on grasses, and it is possible that spring infection may arise from these spores. There was, however, no direct evidence that this is the case.

To gain information as to the best time of cutting rusted grain, experiments were carried on at Indian Head and an opportunity was given to study similar experiments carried on at the Manitoba Agricultural College by the Field Husbandry Department. Both of these experiments indicated that a greater yield was obtained by leaving the grain to mature than cutting earlier.

Some time was spent in a barberry survey in Manitoba, and a number of barberries were located. It is expected that all these will be eradicated before the season for infection.

The stripe disease and related diseases due to species of *Helminthosporium* were locally severe in barley. There was also considerable wheat attacked by *Helminthosporium*. The scab of wheat caused by *Fusarium culmorum* was quite prevalent in the districts in Manitoba where there was a considerable rainfall, but not much was noticed in Saskatchewan.

Some investigational work on the stem and leaf rusts of wheat was undertaken in the greenhouse at Saskatoon but sufficient space was not available for extensive work till late in the season. This phase of the work will receive more attention in the future.

GENERAL ECONOMIC BOTANY

During the year a large number of requests of the usual kind, namely, information on the best methods of controlling certain weeds, poisoning of domestic animals by various plants, medicinal uses of plants, culture of wild rice, etc., were received. Miscellaneous enquiries covering a wide range of subjects were received dealing with such questions as the cultivation of aromatic plants, insect flowers, utilization of juniper berries, sumac, peanuts, guayule rubber, the treatment of hawthorn seeds with sulphuric acid to facilitate germination, etc.

The number of weeds and wild plants sent in for naming and report on their properties was smaller than usual, amounting to 631 specimens.

In connection with the Herbarium a specimen case containing 100 species of seeds of weeds and other plants in bottles was received through the kindness of the Seed Commissioner. Four dried specimens of plants were received from Mr. W. B. Anderson, of British Columbia, and a white-fruited specimen of Juneberry, sent in from Rigaud, Quebec, was added to the Herbarium.

Information having been received from the Board of Public Works that certain harbours on the Atlantic coast were being blocked up by drifting sand, and a suggestion having been made that some person should visit these localities, Miss F. Fyles paid a visit to New Brunswick and Nova Scotia and made a study of the present condition of the sand-dunes and collected samples of the different kinds of vegetation growing thereon.

Copies of the Annual Exchange List of Seeds were sent out to various botanical gardens in British Columbia, United States, New South Wales, Japan, Italy, Switzerland, France, Holland, Ireland, Scotland, Denmark, and Sweden.

During the year 526 packets of seeds and 29 rooted plants were sent out and 573 packets of seeds were received from foreign botanical gardens.

Considerable additions were made to the collection of living plants in the Arboretum.

A sample of broom corn obtained from St. Eustache, Que., which appeared to be suited to the climate of Canada, was sown and proved to have a "brush" of a fair length. A considerable number of well-ripened seeds were obtained from it for further experiment.

Press articles on Plants used for Tanning, Sunflowers, the Castor Oil Plant, the Cultivation of Mustard, and Broom Corn, were prepared and a bulletin on "Wild Rice," by Miss F. Fyles, was handed in for publication.

Some further progress was made during the year in the preparation of a Catalogue of the Native Plants of Canada.

THE CEREAL DIVISION

REPORT OF THE DOMINION CEREALIST.
CHAS. E. SAUNDERS, B.A., Ph.D.

THE SEASON

The season of 1919 was, on the whole, unfavourable to cereals. In some parts of Eastern Canada good crops were produced, but, in other sections, as at Ottawa, the drought and extreme heat of June and early July very materially reduced the yield. However, the quality of the wheat was good, and that of the oats and barley was fair, though the grain was not so plump perhaps as usual. In some parts of Manitoba and over large areas in Saskatchewan and Alberta, unusual drought prevailed, amounting, in some cases, to a total destruction of the crop. In addition to the drought, there were high winds in some sections which, at times, produced disastrous consequences. Owing to these adverse conditions no crop was produced on the Experimental Station at Rosthern, or on the non-irrigated area on the Experimental Station at Lethbridge. The other Farms and Stations in these three provinces succeeded however, in obtaining results worthy of record, showing that even under conditions of unusual drought, good paying crops can sometimes be reaped.

Many sections of British Columbia also suffered from the remarkably dry weather, and though cereals are not an important crop in that province there was a considerable loss from the reduced yields.

At Ottawa, the first grain was sown in the fields on April 30, though seeding did not become general until several days later. Harvesting began on July 18, which was exceptionally early; and the first threshing was done on July 31.

TESTS OF VARIETIES

Almost every season reveals some possible improvement in the method of carrying on the plot tests of varieties. The system is therefore being gradually modified from year to year as experience accumulates. In spite, however, of the greatest care, it is not practicable, in very unfavourable seasons, to secure results of much value. Fortunately, at Ottawa, the weather is less liable to extreme fluctuations than at some other places and it is therefore possible, here, to obtain fairly good results every year from plot tests. During the past season, there were grown at Ottawa 570 very small plots of new varieties of wheat, oats, barley, peas and flax, and 596 regular test plots of cereals, etc. In addition to these, there were 36 plots of barley sown for hay purposes and 79 large strips of cereals for propagation. The total number of plots and strips at Ottawa was 1,281, representing about 1,100 varieties. Nearly all of these are new cross-bred sorts produced by the Dominion Cerealist.

MARQUIS WHEAT

It is a pleasure to be able to record still further triumphs for Marquis wheat. While during the last few years, some new varieties have been pushed into promin-

ence as rivals of Marquis, that variety again won the highest award in an international competition, last autumn, when Mr. J. S. Fields, of Regina secured the world's prize and sweepstakes for the best spring wheat at the International Soil Products Exposition, Kansas City, Missouri. The season in Saskatchewan was not very favourable, owing to dry weather and the prevalence of rust, but Marquis wheat did very well considering the adverse circumstances, and showed itself decidedly more resistant to rust than the variety Red Bobs with which it has sometimes of late come into competition.

HULLESS OATS

The new variety of hulless oats recently introduced by the Dominion Cerealist, under the name of Liberty, Ottawa 480, gave an excellent account of itself last season in almost every locality where conditions were at all favourable. Fortunately, it appears that this oat is likely to do best in those somewhat northern sections of Alberta where the raising of hogs and other live stock must always occupy a large and permanent place in agriculture. As the hulless oat makes excellent feed for almost all classes of animals, and particularly for young pigs, it is very gratifying to note its special adaptability to the region in question. Last autumn, when the annual distribution of free samples of seed grain began, there was very little demand for the Liberty oat, as many of the farmers had not heard of it up to that time. However, an announcement in the newspapers and agricultural journals soon brought too great a number of applications and we were unfortunately obliged to refuse very many of them. Arrangements have been made, however, for the growing of a much larger acreage during the coming season, and it is hoped that the supply of seed will be fairly adequate next winter, at least so far as the free distribution is concerned. Of course, in the case of any new variety of striking merits, it is impossible entirely to satisfy the demand for seed during the first few years.

RUBY WHEAT

The new extra-early ripening wheat called Ruby, Ottawa 623, which was introduced recently by the Dominion Cerealist, has done exceptionally well on some of the farms in rather northern latitudes in the central provinces. There is no doubt that this variety fills a real want in districts for which Marquis has proved a little too late in ripening and where the greatest possible earliness, such as is found in Prelude wheat, is not essential.

OTHER NEW VARIETIES

Three other new varieties which are attracting attention may also be mentioned. A new fibre flax under the name "Longstem, Ottawa 53"—a selection from some flax received from Ireland—has given very good results in the field and has shown itself of excellent fibre quality. A few samples of this variety were sent out last autumn and arrangements have been made to distribute a larger quantity next season. It is believed that this variety, on account of the exceptional length of its fibre, will be of great value. The yield of seed produced from it is not at all large.

A selected bean, under the name of "Norwegian, Ottawa 710," was distributed in considerable quantities this last winter. While this bean is brown and therefore lacks the attractiveness of the white varieties, it is so early in ripening and so productive that it will probably prove of considerable value in some of those districts where the season is short and for which hitherto no variety of field bean has been introduced which ripened sufficiently early.

The new pea which has already been announced, Mackay, Ottawa 25, was not distributed this season, because the stock of seed on hand was not more than was

required for propagation. Arrangements have been made by which it is hoped that a certain quantity of this variety will be available for distribution next winter. The Mackay, though somewhat late in ripening, is certainly one of the most productive peas known.

PUBLICATIONS ISSUED

Two important little bulletins were sent out during the past season. The first of these is called "The Best Varieties of Grain." In it details are given as to the varieties recommended for the different soils and climates of Canada.

The other bulletin is entitled "The Use of Coarse Grains for Human Food." Its aim is to encourage the use of oats, barley, peas, etc., as human food, on account of the advantages which they possess from a point of view of health as well as price. It was also desired to show how the cost of food in outlying districts might be reduced by the farmers growing more material which they could themselves grind for use at home.

FREE DISTRIBUTION OF SEED SAMPLES

A somewhat larger number of free samples were sent out last season than in the immediately preceding years. It is expected that the distribution will increase in amount as our stock of seed of the most desirable varieties is gradually built up. It was deeply to be regretted that several thousand applications for samples of the new hulless oat, Liberty, Ottawa 480, had to be refused. The quantity of seed on hand was not nearly sufficient to satisfy the very large and somewhat unexpected demand.

A great many applications for flax had also to be declined. This was the first season for the distribution of flax and beans. The stock of beans was quite adequate, and it is expected that a sufficient quantity of flax will be on hand next season. It is not easy to foresee just what will be the demand in any particular case and, especially when new varieties are being introduced, we are frequently unable to provide enough seed the first year.

The following tables give some details as to the distribution of this season:—

SEED DISTRIBUTION, 1919-1920. CLASSIFIED BY PROVINCES

—	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Oats	55	199	112	824	615	236	574	564	153	3,332
Wheat	29	132	58	593	233	185	432	455	121	2,238
Barley	8	61	19	455	166	83	191	184	44	1,211
Beans	14	105	44	268	71	50	88	127	51	818
Peas	3	40	24	260	165	39	111	133	44	819
Flax	7	13	4	116	100	70	118	49	12	489
Total	116	550	261	2,516	1,350	663	1,514	1,512	425	8,907

MILLING AND BAKING TESTS

The number of milling and baking tests during the past twelve months was not very large owing to the fact that at the present time there is no special assistant for this work, the former milling and baking assistant occupying now the position of chief assistant and having, therefore, less time to devote to any special line of work than formerly. The study of the effect of storage on flour and wheat was continued and a few other special investigations were also made, but the greater part of the time devoted to milling and baking was given to tests of new cross-bred varieties which are intended for the large, central, wheat growing sections of Canada, where baking quality is of special importance to the reputation of the grain. A number of interesting crosses between Marquis and Prelude wheats were examined as well as some others. Altogether sixty samples of wheat were ground and 262 small loaves were baked.

DIVISION OF FORAGE PLANTS

REPORT OF THE DOMINION AGROSTOLOGIST, M. O. MALTE, PH.D.

The effects of the war still being felt in the matter of providing for an adequate supply of field root seed of the best quality being kept available in commercial quantities to the farmers of Canada, the Division of Forage Plants was in duty bound to try to secure, by emergency production, the necessary quantities of the field root seed needed. Accordingly, the production of field root seed on a commercial scale was, in the activities of the Division, given preference over other phases of work, such as plant breeding and research work in general, on the ground that immediate results, necessitated through the effect of the war on general agricultural conditions, must be considered of more vital importance to Canadian agriculture than investigations expected to bear fruit in the future. Nevertheless, and in spite of the time and energy that the providing of a commercial field root seed supply cost the Division, the necessity of preparing for constructive work of a nature calculated to be of value in years to come was realized as clearly as it was in the previous year, when, also, most of the activity of the Division had to be devoted to war emergency work. Accordingly, much was done in preparation for the resumption of the normal work coming under the scope of the Division. On account of its varied nature, it can however, not be reported upon in detail. It may be mentioned, though, that a large number of types of grasses and other forage plants were collected, the said types to be used for breeding purposes as soon as the conditions associated with the termination of the war may allow the Division to resume its normal activities.

EMERGENCY ROOT SEED PRODUCTION

In 1918, the Division of Forage Plants arranged, as stated in last year's report, to have considerable quantities of mangels, swede turnips and carrots grown for the purpose of having available a supply of roots suitable for seed growing, in case the conditions in the spring of 1919 should warrant emergency seed production. As the conditions governing the field root seed market in the spring of 1919 seemed to call for an emergency production of root seed, the division undertook, so as to enable the farmers to secure seed of the best possible quality, to plant as many roots of the most popular varieties as were available for seed production. Without going into details of the carrying through of the seed-growing programme—although many observations might be worthy of being brought to the notice of the agricultural public—the Division begs to report the production of the following quantities of marketable field root seed. In doing so, the Division wishes to state that the quantities as given below were disposed of commercially through the Markets Intelligence Division of the Seed Branch of the Dominion Department of Agriculture, with the exception of what was needed for the Farms and Stations of the Experimental Farms' System.

	Pounds
Grown at the Central Experimental Farm, Ottawa—	
Yellow Intermediate mangel	5,605
Danish Champion carrot	266
Grown at the Dominion Experimental Station, Charlottetown, P.E.I.—	
Yellow Intermediate mangel	1,600
Half Sugar White mangel	6,000
Champion swede turnip	1,750
Grown at the Dominion Experimental Station, Kentville, N.S.—	
Canadian Gem swede turnip	760
Kentville Green Top swede turnip	2,283
Ditmar's Green-Bronze Top swede turnip	3,668

	Pounds
Grown at the Dominion Experimental Farm, Nappan, N.S.—	
Monarch Swede turnip	975
Grown at the Dominion Experimental Station, Fredericton, N.B.—	
Good Luck Swede turnip	1,400
Grown at the Dominion Experimental Station, Ste. Anne de la Pocatière, Que.—	
Good Luck Swede turnip	1,545
Grown at Dominion Experimental Station, Summerland, B.C.—	
White Intermediate carrot	780
Danish Sludstrup mangel	3,130
Grown at the Dominion Experimental Farm, Agassiz, B.C.—	
Yellow Leviathan mangel	1,125

In the above figures are included 341 pounds of Danish Sludstrup mangel seed grown by Mr. Thos. Carefoot, Summerland, B.C., from roots supplied by the Experimental Station, Summerland, B.C.

Summing up, the Division of Forage Plants produced the following quantities of field root seed on an emergency basis:—

	Pounds
Mangel seed	17,770
Swede turnip seed	12,411
Carrot seed	1,546
Total	31,727

PRODUCTION OF STOCK SEED OF FIELD ROOTS

The object of the undertaking of production of stock seed of field roots is to make available sufficient quantities of so-called stock seed to prospective seed growers every year. "Stock seed" is defined as seed of improved varieties breeding so true to type that growers reproducing it for commerce may harvest seed of varieties of the highest possible standard. It involves a gradual improvement of the most popular varieties and a maintenance of a high standard of them under the best possible guarantees. It further involves the development of varietal types particularly suited to different sections of Canada.

In order to carry out the stock seed production programme as satisfactorily as possible, the Branch Farms and Stations, situated in districts where root growing is of importance, have been requested to undertake improvement work with the most popular varieties. No Station is requested to work with more than one variety of mangels, swede turnips, and carrots respectively, this arrangement being made for the purpose of preventing accidental crossings between related varieties which, if they occurred, would, of course, lower the purity standard of a variety.

Mangel varieties are under improvement at Ottawa, Ont., Charlottetown, P.E.I., Kentville, N.S., Ste. Anne de la Pocatière, Que., Summerland, B.C., Agassiz, B.C., Sidney, B.C., swede turnip varieties are worked with at Ottawa, Ont., Charlottetown, P.E.I., Nappan, N.S., Kentville, N.S., Fredericton, N.B., Ste. Anne de la Pocatière, Que., Cap Rouge, Que., and field carrot varieties at Ottawa, Ont., and Summerland, B.C.

VARIETY TESTS

A very large number of varieties of mangels, swede turnips and field carrots were tested. The results obtained were very disappointing. Most of the varieties were hardly recognizable, being so badly mixed and off-type that it was considered useless even to take any records. The inferior quality of many of the most popular varieties grown by Canadian farmers, which has been particularly noticeable during the last few years, emphasizes the advisability of undertaking the stock seed production work mentioned in the preceding paragraph.

BREEDING OF GRASSES AND CLOVERS

The breeding work with grasses and clovers which for the last few years has practically been at a standstill, owing to the necessity of paying particular attention to problems arising out of war conditions, was resumed. The work on the breeding material already growing at the Central Experimental Farm was continued and much new material collected.

Western Rye Grass.—As explained in last year's report, the western rye grass is, from a plant breeder's standpoint, one of the most interesting and promising grasses. It is native to Canada and occurs from the Atlantic to the Pacific, being particularly plentiful in the drier sections of the West. The western rye is one of the most complex grasses, consisting as it does of a very large number of forms, as practically no one of the characters, the sum total of which makes up the species, is a constant. The variability of the western rye is noticeable in all sections of Canada in which it is fairly common, and particularly conspicuous in the valleys of British Columbia and between the prairie proper and the lower slopes of the Rockies.

Its polymorphous character is of the greatest interest to the plant breeder, because it enables him to secure, without much difficulty, a very large collection of easily distinguishable forms of a widely different agricultural value. As the various forms, according to observations made, seem to breed true to type, a very large number of varieties can be secured simply by propagation of the forms occurring in the wild state. As, furthermore, the Western Rye grass plants are normally self-fertilized, no special precautions against possible crossings taking place need to be taken, a fact which enables the breeder to work with a large number of varieties without any danger of their deteriorating in purity through crossings.

During the season of 1918 some one hundred plants representing forms of different agricultural value were collected in Western Canada and shipped to Ottawa, where they were transplanted.

In 1919 seed was harvested from seventy-four of them. In addition, seed was harvested from seven distinct varieties developed from seed of wild plants collected at Calgary, Alberta, in 1916.

In order to secure further stock material for the development of new varieties, a large number of seed samples was collected from wild plants in the West in the late summer of 1919.

Other Grasses.—The breeding work with timothy which was discontinued during the greater part of the war was resumed, as was also the breeding work with orchard grass and meadow fescue.

In order to secure ample breeding material, a large number of samples of seed of different forms of orchard grass were collected in British Columbia, and there also were collected a few samples of forms of Kentucky blue grass and of red or creeping fescue.

ALFALFA

In 1915, the Division of Forage Plants was growing several lots of alfalfa strains developed from individual plants through self-fertilization. The lots in question were widely different from each other, but remarkably uniform within themselves. They demonstrated that it is possible to develop, in a comparatively short time, distinct varieties of alfalfa recognizable with certainty in the field.

The importance of having such varieties in the trade instead of the polymorphous and vaguely defined so-called varieties which so far are used, is apparent and arrangements were therefore made, five years ago, to continue the alfalfa breeding work on an extended scale. Unfortunately conditions did not allow the breeding work to be continued until this year when seed was secured from a small number of self-fertilized plants.

VISIT TO EXPERIMENTAL STATIONS IN THE UNITED STATES

Through the kind permission of the Deputy Minister of Agriculture and the Director of the Dominion Experimental Farms, the Dominion Agrostologist was given a much appreciated opportunity to visit a number of experimental stations and other agricultural institutions in the east and middle west of the United States. Much valuable information, especially on forage plants and the status of plant breeding in the United States, was gathered during the trip. Arrangements were also made to establish a closer co-operation between the Dominion Agrostologist and forage plant experts at the agricultural institutions visited.

DIVISION OF ILLUSTRATION STATIONS

REPORT OF THE SUPERVISOR, JOHN FIXTER

In the following report, two-year rotation signifies a rotation in which the first year is summer-fallow and the second year is a grain crop. Three-year rotation signifies that the first year is summer-fallow and the second and third years are grain crops. The four-year rotation consists of first year in summer-fallow, second year wheat sown with western rye grass and the third and fourth years are in hay. The five-year rotation is a rotation in which the first year is summer-fallow, the second year is wheat, the third year is oats seeded with western rye grass and the fourth and fifth years are in hay.

The costs of production are based upon the following scales:—

	Standard cost	Actual cost
Rent of land.. .. ..(per acre)	$2 00	$2 00
Seed wheat.. .. .. "	1 50	3 30
Seed oats.. .. .. "	1 00	2 00
Western rye grass.. .. ..(per pound)	0 30	0 30
Alfalfa.. .. .. "	0 45	0 45
Machinery.. .. ..(per acre)	0 60	0 60
Manual labour.. .. ..(per hour)	0 20	0 35
Horse labour.. .. .. "	0 07	0 15
Threshing—		
Wheat.. .. ..(per bushel)	0 07	0 12
Oats.. .. .. "	0 04	0 10

ILLUSTRATION STATIONS IN ALBERTA

Bassano.—Operator, R. H. Jones. The spring of 1919 opened rather late, work on the Station commencing April 30. Throughout the early part of the season, prospects of good crops were fair until drought and hot winds retarded growth. Later in the summer, rains came, which revived late growing crops and relieved somewhat a serious situation.

This being the first season this Station has been in operation, the sequence of crops is not yet established. Oats sown May 13 ripened August 16, giving a yield of 20 bushels per acre at a standard cost per bushel of 63 cents and an actual cost per bushel of $1.01. Oats taken as green feed gave a yield of 1,600 pounds per acre and were grown at a standard cost of $12.19 per ton; the actual cost was $19.28 per ton. Cost of summer-fallowing three fields, a total of 15 acres, was $5.19 per acre, standard cost; $7.76 per acre, actual cost.

Bow Island.—Operator, Martin Mortensen. The spring of 1919 opened in good time, work on the land commencing April 5. The moisture supply in the soil was scant, and very little rain fell during the growing season. This shortage of moisture

together with hot winds, and a hailstorm just before cutting time, resulted in almost a crop failure. Wheat sown April 17 ripened July 22, and oats sown April 29 ripened July 31. Cost of summer-fallowing four fields, a total of 20 acres, was $6.44 per acre, standard, and $10.20 per acre, actual.

	Yield per acre	Standard cost	Actual cost
		Per bush.	Per bush.
Wheat after fallow in 3-year rotation	1 bush. 12 lbs.	$10 14	$17 38
Wheat after wheat in 3-year rotation	36 lbs.	15 80	26 60
Wheat after fallow in 4-year rotation	1 bush.	10 12	13 19
Western rye grass in 4-year rotation	No crop.		
Oats after fallow in 3-year rotation	5 bush. 5 lbs.	2 00	3 32
Oats after grain crop in 3-year rotation	No crop.		

Carmangay.—Operator, W. H. Millar. The spring of 1919 opened early, work on the land commencing April 3. The seed went into the soil in nice shape and started away in a uniform manner. By June 20 continued dry weather, persistent attacks of gophers and blasting of heated winds had done their effective work. Rains did not follow in time to give any relief, and consequently the field crops were a total failure. Wheat was sown on April 17, and oats were sown on May 8. Cost of summer-fallowing three fields, a total of 15 acres, was $4.90 per acre standard and $7.21 per acre actual cost. Cost of operating the station of ten fields, a total of 50 acres, was $4.68 per acre, standard, and $6.84, actual.

Delacour.—Operator, G. M. McElroy. The spring of 1919 opened in good time, work on the land commencing April 10. Sufficient moisture was in the ground for a uniform germination, and the crop came along fairly well for a time. By June 24 the effects of drought and heat could be noticed upon the wheat in the colouring of under leaves. Drought continued so long that wheat was seriously injured. On August 6 a hailstorm passed over the district, taking from 25 per cent to 50 per cent of the crop that was existing. Rain coming later encouraged a second growth. Cutting was then delayed that a maximum amount might be harvested. Owing to early frost the quality was inferior, and early winter made it advisable to take this mixed growth as roughage feed. Wheat sown April 12 ripened August 27, and oats sown April 18 ripened September 20. Cost of summer-fallowing three fields, a total of 15 acres, was $4.62 per acre, standard, and $6.68 per acre, actual.

	Yield per acre	Standard cost	Actual cost
	lbs.	per ton	per ton
Wheat taken as roughage feed in 3-year rotation	1,066	$13 97	$21 20
Oats taken as roughage feed in 3-year rotation	1,200	11 25	15 98
Wheat taken as roughage feed in 4-year rotation	1,066	16 31	24 78
Oats replacing hay in 4-year rotation, grass seeds failing	1,200	8 86	12 62

Foremost.—Operator, P. H. Frankish. The spring of 1919 opened in fair time; seeding was in progress by April 17. Conditions at time of sowing were promising. This favourable start of grain crops was not followed by sufficient rainfall to continue them well to maturity, and in consequence of the drought and hot winds an almost complete crop failure was experienced. Wheat sown April 17 ripened July 31, gave a yield of 3 bushels per acre and was grown at a standard cost of $3.19 per bushel and at an actual cost of $4.87 per bushel. Cost of summer-fallowing four fields, a total of 20 acres, was $4.49 per acre, standard, and $6.41 per acre, actual. At this point precipitation from April to October amounted to 6·24 inches.

Grassy Lake.—Operator, J. E. James. The spring of 1919 opened in good time, work on the land commencing April 12. Seed germination and start of crop was fairly uniform. Lack of rain during the growing season, hot winds and depredation of gophers, however, reduced the yield greatly, and over considerable portions of fields took the entire crop. Wheat sown April 21 ripened August 5, and oats sown April 23 ripened August 8. Cost of summer-fallowing three fields, a total of 15 acres, was $3.77 per acre, standard, and $5.33 per acre, actual.

—	Yield per acre	Standard cost	Actual cost
Wheat after fallow in 2-year rotation	No crop.		
Oats after fallow in 2-year rotation	No crop.		
		per bush.	per bush.
Wheat after fallow in 4-year rotation	8 bush.	$0 86	$1 30
Oats replacing grass failure in 4-year rotation	14 bush.	0 48	0 74
Western rye grass in 4-year rotation	No crop.		

High River.—Operator, B. F. Kiser. The spring of 1919 opened in good time, seeding being in progress by April 15. The crops made a uniform start and carried well till the 1st of June, when the need of rain became apparent. Rains did not come for some time, and through this want of moisture in midseason growth the yield of wheat was considerably reduced. Early winter interfered with the threshing operations, and oats were taken in the sheaf as feed for stock. Wheat sown April 15 ripened August 12, and oats were sown April 30. Cost of summer-fallowing two fields, a total of 10 acres, was $3.99 per acre, standard, and $5.35 per acre, actual.

—	Yield per acre	Standard cost	Actual cost
		bush.	bush.
Wheat after fallow in 3-year rotation	17 bush.	$0 52	$0 79
Wheat after wheat in 3-year rotation	2 bush.	3 22	4 82
Wheat after fallow in 5-year rotation	17 bush.	0 51	0 77
Oats in the sheaf after wheat in 5-year rotation	1 ton 1,000 lbs.	3 89 ton	5 45
Western rye grass in 5-year rotation	No crop		
Alfalfa	1 ton.	4 63	6 83

Jenner.—Operator, Jerry Fisher. The spring of 1919 opened somewhat late, work on the land not being started until the 23rd of April. The crops made a fair start and progressed for a time. At the end of June effects of drought were evident. Continued want of rain, hot winds and persistence of gophers, resulted in almost a total crop failure. Wheat sown April 24, ripened August 18 and oats were sown on May 7. Wheat gave a yield of 3 bushels per acre and was grown at a standard cost of $2.60 per bushel and at an actual cost of $4.16 per bushel. Oats and corn gave no crop. Cost of summer-fallowing three fields, a total of 15 acres, was $5.40 per acre, standard, and $8.14 per acre, actual. Precipitation at this point from April to October was 7·93 inches.

Macleod.—Operator, Norman Grier. The spring of 1919 opened in good time, work on the land being in progress by the 12th of April. Moisture in this soil was equal to a uniform germination and a fair crop start. By the middle of June the effect of drought was apparent. This adverse condition continued and was added to by hot winds and soil drift, which in much of this district resulted in complete crop failure. Owing to exceptional work upon the station a small return was obtained from certain fields. Wheat sown April 12, ripened August 25 and oats sown April 24, ripened

August 25. Cost of summer-fallowing two fields, a total of 10 acres, was $4.51 per acre, standard, and $6.43 per acre, actual.

—	Yield per acre	Standard Cost	Actual cost
Wheat after fallow in 2-year rotation	5 bush	$1 97 per bush.	$2 94 per bush.
Oats after fallow in 2-year rotation	10 bush	0 94 per bush.	1 38 per bush.
Wheat after fallow in 4-year rotation	3 bush	2 74 per bush.	4 11 per bush.
Oats replacing grass failure in 4-year rotation	No crop		
Western rye grass in 4-year rotation	No crop		

Magrath.—Operator, J. A. Meldrum. The spring of 1919 opened early, work on the station fields commencing the 2nd of April. Germination and start of crop was only fair, the soil not being stored with moisture from 1918. Early dry conditions had an effect and by the 20th of June from drought, heat and gophers a serious reduction in grain yields was recognized. These unfavourable conditions continuing resulted in almost complete crop failure. Wheat sown April 15, ripened August 4, and oats were sown on May 1. One field of wheat was harvested, yielding 7 bushels and 12 pounds per acre, and was grown at a standard cost of $1.93 per bushel and at an actual cost of $2.84 per bushel. Cost of summer-fallowing three fields, a total of 15 acres, was $3,84 per acre, standard, and $5.10 per acre, actual.

Milk River.—Operator, B. L. Cornwall. The spring of 1919 opened in average time, seeding being in progress by April 17. The moisture supply was equal to good germination and gave the grain crop a fair start. Frequent showers were received during May and the fore part of June but only at one time did an appreciable quantity of rain fall. As a consequence before the end of June, from drought and heat, crops were on the verge of burning. Later there was no relief by summer rains and conditions grew worse, with the result that only a small amount of grain was harvested. Wheat sown April 17, ripened August 16, and oats sown May 13, ripened August 20. One wheat field gave a yield of 2 bushels and 30 pounds per acre and was grown at a standard cost of $3.59 per bushel and at an actual cost of $5.40 per bushel. Oats gave a yield of 11 bushels and 23 pounds per acre and were grown at a standard cost of 51 cents per bushel, and at an actual cost of 81 cents per bushel. Cost of summer-fallowing two fields, a total of 10 acres, was $5.33 per acre, standard, and $8.01 per acre, actual. Precipitation at this point from April to September amounted to 5·41 inches.

Munson.—Operator, R. R. Fraser. The spring of 1919 opened somewhat late, the first seeding being done on April 30. Moisture conditions were favourable which were partly due to retentive nature of the soil in this locality. Germination and start of crop were fairly uniform and growth continued healthy throughout the season, wheat lengthening from 10 inches to 26 inches between June 13 and July 5.

A good crop of wheat was harvested on August 27, and oats sown on May 13, were cut on August 25. The work and results on this station merit special mention in this generally poor crop year. Cost of summer-fallowing two fields, a total of 10 acres, was $4.44 per acre, standard, and $6.28 per acre, actual.

—	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 3-year rotation	27 bush	$0 27 per bush.	$0 42 per bush.
Wheat after wheat in 3-year rotation	37 bush	0 23 per bush.	0 36 per bush.
Wheat after fallow in 5-year rotation	44 bush	0 24 per bush.	0 37 per bush.
Oats after wheat in 5-year rotation	65 bush	0 13 per bush.	0 22 per bush.
Western rye grass in 5-year rotation	3 tons	1 87 per ton.	2 16 per ton.
Alfalfa	1 ton 1,333½ lbs.	6 80 per ton.	8 12 per ton.

Pincher Creek.—Operators, Messrs. Sandgren and Carlson. The spring of 1919 opened early, seeding being in progress by the 4th of April. Germination was only fair, and early in the season a lack of moisture was noticed by the drifting of the soil. The growing crop hung on persistently until the latter part of June; at this time owing to continued drought, heat, and inroads of gophers, a greatly reduced yield became apparent and the result was almost total crop failure. Wheat sown April 4, ripened August 15, and oats sown May 12, were cut on August 15. Cost of summer-fallowing two fields, a total of 10 acres, was $4.46 per acre, standard, and $6.35 per acre, actual.

—	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 3-year rotation	1 bush. 12 lbs.	$ 7 03 per bush.	$10 68 per bush
Wheat after wheat in 3-year rotation	1 bush. 36 lbs.	4 72 per bush.	7 47 per bush.
Wheat after fallow in 5-year rotation	3 bush. 24 lbs.	2 52 per bush.	3 84 per bush.
Oats after wheat in 5-year rotation	5 bush. 7 lbs.	1 54 per bush.	2 83 per bush.
Western rye grass in 5-year rotation	600 lbs.	17 48 per ton.	19 13 per ton.
Alfalfa	1,333½ lbs.	8 97 per ton.	10 52 per ton.

Taber.—Operator, I. L. Holman. The spring of 1919 opened about the average time, seeding being in progress by April 18. Drought and soil drifting were in evidence early. Aided by snow and rain at the beginning of May, a fair recovery and some promise of crop was made up to the middle of June. From this time drought and hot winds prevailed, resulting in a very meagre stand, which was further reduced at cutting time by a hailstorm. As a consequence of these unfavourable circumstances, this district suffered an almost complete crop failure. On the station, a small return was given by certain fields. Wheat sown April 18, ripened July 28, and oats were sown on May 13. Cost of summer-fallowing three fields, a total of 15 acres, was $4.52 per acre, standard, and $6.41 per acre, actual.

—	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 2-year rotation	5 bush.	$1 94 per bush.	$ 2 86 per bush.
Oats after fallow in 2-year rotation, taken as roughage feed	1,200 lbs	16 40 per ton.	23 95 per ton.
Wheat after fallow in 4-year rotation	4 bush. 36 lbs.	1 96 per ton.	3 01 per ton.
Oats as hay in 4-year rotation	No crop		
Western rye grass	No crop		

Wainwright.—Operator, G. C. Boyd. The spring of 1919 opened in average time, seeding being in progress by April 16. A scant moisture supply was early in evidence, soil becoming drifty by the end of May. By the middle of June owing to drought and heat, the wheat crop was pretty well burnt. Rains came later in the season and encouraged a second growth which when cut with the mower, made of wheat a roughage feed for stock. These late rains came in time to save part of the oat crop, permitting a threshing which gave about one-third of a fair return in grain. Wheat was sown on April 16, and oats sown April 25, ripened September 18. This being the first season for operating the station at this point, a variation in yield due to position in rotation is not seen. Wheat as roughage feed gave a yield of 1,200 pounds per acre at a standard cost of $13.82 per ton, and at an actual cost of $21.47 per ton. Oats gave a yield of 20 bushels to the acre and were grown at a cost of 36 cents per bushel standard and 58 cents per bushel actual cost. Cost of summer-fallowing three fields, a total of 15 acres was $6.18 per acre, standard, and $9.73 per acre, actual.

Whitla.—Operator, R. H. Babe. The spring of 1919 opened in average time, seeding being in progress by April 19. Moisture content of the soil was sufficient for

germination and gave the seed a uniform start. Crop growth held on fairly well until about the middle of June. By this time, the drought was having an effect, hot winds soon added their blight, gophers persistently attacked and the combined result was disastrous to the wheat. Oats were withered back to the ground. At harvest time hail further reduced what little wheat remained, resulting in an almost total failure. Wheat sown on April 19, ripened August 6, and oats were sown on May 14. Cost of summer-fallowing three fields, a total of 15 acres, was $8.46 per acre, standard, and $14.29 per acre actual.

——	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 2-year rotation	2 bush.	$ 7 74 per bush.	$12 86 per bush.
Oats after fallow in 2-year rotation	No crop		
Wheat after fallow in 4-year rotation	2 bush.	6 45 per bush.	10 73 per bush.
Oats as hay in 4-year rotation, grass seeds failing	No crop		
Western rye grass in 4-year rotation	1,000 lbs.	11 67 per ton...	13 78 per ton.
Alfalfa in rows	1 ton.	5 58 per ton...	7 04 per ton.

Youngstown.—Operator, G. S. Coad. The spring of 1919 opened towards the end of April, seeding being in progress by April 22. The moisture supply was short, and by the 20th of May effects of drought were seen, and the destructive work of cutworms was in evidence. Drought continued and by the forepart of July, a crop failure had become a probability. Throughout July and August showers occurred on ten different dates, but the quantity of rain received at no time was effective and consequently almost a total crop failure was experienced. Wheat sown April 22, ripened August 18, and oats were sown on May 7. Wheat gave a yield of 1 bushel and 40 pounds per acre at a standard cost of $4.75 per bushel and an actual cost of $7.28 per bushel. Oats cut for roughage feed gave one ton per acre at a standard cost of $8.61 per ton. Western rye grass gave a return of 1,000 pounds per acre at a standard cost of $5.26 per ton and an actual cost of $11.54 per ton. Cost of summer-fallowing two fields, a total of 10 acres, was $4.90 per acre, standard, and $7.21 per acre, actual. Precipitation at this point from April to October amounted to 7·48 inches.

ILLUSTRATION STATIONS IN SASKATCHEWAN

Assiniboia.—Operator, P. J. H. Warren. The spring opened here a little later than usual and seeding was started April 22. There was very little moisture in the subsoil, owing to the previous dry season. There was a fair amount of moisture in the spring and all crops made a favourable start Dry weather followed with very little rain and crops suffered considerably. Then a hailstorm in July practically destroyed all crops. Later rain caused a second growth in the oat crop, and gave a small quantity of green feed.

Biggar.—Operator, S. E. Shaw. The spring opened here about the usual time and seeding operations were started April 15. The subsoil was dry, but there was a fair amount of moisture in the spring from the snow and light showers of rain. Crops had made a good beginning when the dry weather set in and the dry winds began to blow. Late spring frost did slight damage. The winds caused the soil to drift and cut off the tender plants or covered them over. With these unfavourable conditions the result was practically a crop failure. Some small quantity of green feed was taken from some of the fields.

Three of the fields were sown to fall rye and the plan for next season is to seed the whole station down to grass, alfalfa and sweet clover to restore fibre to the soil.

Davidson.—Operation, R. Lloyd. The spring opened here later than usual and seeding commenced about the latter part of April. There was a fairly good supply of moisture and the grain made a good start. The weather was dry for a time after seeding, but some good rains came in time to keep the crops growing. Wheat was harvested August 7, and oats August 19. Yields were fair. Late rains added considerably to the yield of the late oat crop. Cost of summer-fallowing two fields, a total of 10 acres, was $4.90 per acre, standard, and $5.89 per acre, actual.

—	Yield per acre	Standard cost	Actual cost
Wheat after fallow in 3-year rotation	18 bush.	$0 67 per bush.	$0 78 per bush.
Wheat after wheat in 3-year rotation	9 bush.	1 02 per bush.	1 27 per bush.
Wheat after fallow in 5-year rotation	17 bush. 12 lbs.	0 70 per bush.	0 84 per bush.
Oats after wheat in 5-year rotation	21 bush. 20 lbs.	0 44 per bush.	0 52 per bush.
Oats where grass failed in 5-year rotation	23 bush. 20 lbs.	0 43 per bush.	0 51 per bush.
Hay in 5-year rotation	1,200 lbs.	8 26 per ton.	9 01 per ton.

Herbert.—Operator, M. Holmes. The spring opened in fair time here and seeding commenced about the middle of April. Though the soil was fairly dry from the previous dry season, the seed went in under fairly good conditions, and the grain made a good start. Soon after it was up, dry weather set in and continued. Hot winds in July further dried out the soil. The result was an exceptionally early harvest and extremely light crops. Wheat was cut the first week of August. Late rains caused the late oat crop to develop and helped the feed situation. Wheat sown April 22, ripened August 4, and oats sown May 26, ripened September 9. Cost of summer-fallowing three fields, a total of 15 acres, was $6.28 per acre, standard, and $7.97 per acre actual.

—	Yield per acre	Standard Cost	Actual cost
Wheat after fallow in 3-year rotation	2 bush.	$4 83 per bush.	$5 86 per bush.
Wheat after wheat in 3-year rotation	1 bush.	7 22 per bush.	8 97 per bush.
Wheat after fallow in 4-year rotation	2 bush.	4 88 per bush.	6 57 per bush.
Oats for hay where grass seeds failed	No crop		
Oats for hay last crop in 4-year rotation	No crop		
Oats after fallow in 3-year rotation	2 bush.	4 50 per bush.	5 67 per bush.
Oats after grain crop in 3-year rotation	No crop		

Lloydminster.—Operator, H. Hill. The spring opened about the usual time and seeding was started about the middle of April. The soil was dry from last year, but some spring showers helped this condition somewhat. Dry weather soon set in, which, with the hot winds of July, checked the growth of all crops and resulted in an early harvest and light crops. Late rains helped the oat crop, but interfered with the harvest operations. Wheat sown April 17, ripened August 20. Oats were sown May 10. Cost of summer-fallowing two fields, a total of 10 acres, was $4.62 per acre, standard, and $5.11 per acre, actual.

—	Yield per acre	Standard cost	Actual cost
Wheat after fallow in 3-year rotation	10 bush. 30 lbs.	$1 05 per bush.	$1 26 per bush.
Wheat after wheat in 3-year rotation	No crop		
Wheat after fallow in 5-year rotation	11 bush.	1 01 per bush.	1 21 per bush.
Oats after wheat taken as green feed in 5-year rotation	1 ton.	9 25 per ton.	11 57 per ton.
Oats for hay crop in 5-year rotation	1 ton.	6 38 per ton.	8 26 per ton.
Hay	No crop		

Madison.—Operator, Ottawa Farm Co. The spring opened here a little later than usual with a good supply of moisture. The grain made good growth on the start, but dry weather later with hot winds in July checked the growth. Later rains helped all crops, but particularly the late ones. Harvesting was started about the end of August. Wheat was sown April 26, ripened August 29. Oats were sown May 24. Cost of summer-fallowing four fields, a total of 20 acres was $8.64 per acre, standard, and $12.89 per acre, actual.

—	Yield per acre	Standard cost	Actual Cost
Wheat after fallow in 3-year rotation	4 bush. 24 lbs...	$ 2 46 per bush.	$ 3 14 per bush.
Wheat after wheat in 3-year rotation	6 bush. 12 lbs...	1 56 per bush.	2 00 per bush.
Wheat after fallow in 5-year rotation	7 bush. 48 lbs...	1 46 per bush.	1 51 per bush.
Oats after wheat taken as green feed in 5-year rotation	1,000 lbs.....	14 32 per ton...	17 13 per ton.
Oats for hay crop in 5-year rotation	1,000 lbs.....	10 12 per ton...	12 40 per ton.
Hay	No crop		

Maple Creek.—Operator, G. L. Hammond. The spring opened a little later than usual and there was but little moisture in the subsoil from last year. Seeding was started April 21, and the grain made a good start, as there was a fair amount of moisture early. Dry weather followed accompanied by warm winds which checked the growth, a hailstorm on June 16 completed the damage, and as a result crops here were practically a failure, a little green feed only being taken off some of the fields.

Meota.—Operator, Walter Tait. The spring opened in fair time in this district and seeding was started about April 15. Conditions were favourable for growth at first but dry weather soon set in and continued for a long time with very little rain. During July some hot winds came which did material damage to the growing crops. As a consequence all crops were light and harvest early; wheat was cut July 30. Late rains about harvest time helped the late oat crop and the feed situation. Wheat sown April 15, ripened July 30, and oats sown May 14, ripened September 2. Cost of summer-fallowing three fields, a total of 15 acres, was $5.19 per acre, standard, and $6.65 per acre, actual.

—	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 3-year rotation	11 bush.....	$1 08 per bush.	$ 1 29 per bush.
Wheat after wheat in 3-year rotation	2 bush. 36 lbs..	3 86 per bush.	5 12 per bush.
Wheat after fallow in 5-year rotation	10 bush. 36 lbs..	1 12 per bush.	1 34 per bush.
Oats after wheat taken as green feed in 5-year rotation	1,200 lbs.....	19 69 per ton...	24 67 per ton.
Oats in place of hay crop in 5-year rotation	10 bush. 131 lbs.	0 69 per bush.	0 88 per bush.
Oats as green feed for hay crop	1,200 lbs.....	11 71 per ton...	16 04 per ton

Pambrum.—Operator, C. W. Appelgren. The spring opened here a little later than usual, seeding was started April 18. The subsoil was dry from the previous dry season, but due to a fair supply of moisture from the snow and early rains the germination was good on most of the fields. The dry weather which followed with winds dried out the soil and caused practically a failure of all crops. A small quantity of green feed was secured from some of the fields.

Prelate.—Operator W. Huxtable. The spring opened a little later than usual and seeding was started about April 20. The conditions at first were favourable and the grain made a good start. Dry weather soon followed and hot winds in July did further damage. The results was that all crops were light and harvest early, wheat being cut the first week of August. Later rains helped the late oat crop. Wheat sown April

24, ripened August 4, and oats sown April 28, ripened August 9. Cost of summer-fallowing two fields, a total of 10 acres, was $6.23 per acre, standard, and $7.96 per acre, actual.

—	Yield per acre	Standard Cost	Actual cost
Wheat after fallow in 3-year rotation	10 bush. 30 lbs.	$0 94 per bush	$1 15 per bush.
Wheat after wheat in 3-year rotation	5 bush.	1 71 per bush	2 14 per bush.
Wheat after fallow in 5-year rotation	16 bush.	0 66 per bush	0 79 per bush.
Oats after wheat in 5-year rotation	16 bush.	0 51 per bush	0 61 per bush.
Oats for hay in 5-year rotation	No crop		
Alfalfa hay in 5-year rotation	1,000 lbs.	7 24 per ton.	8 90 per ton.

Radville.—Operator, E. Noble. The spring opened here later than usual and seeding was started April 26. The seed went in under fair conditions though there was little moisture in the subsoil. All crops made a good growth at first, but the extremely dry weather which followed with the hot winds checked the normal development and ripened the crops early. Harvest was started on July 28, and oats were sown May 21. Cost of summer-fallowing two fields, a total of 10 acres, was $5.30 per acre, standard, and $7.04 per acre, actual.

—	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 3-year rotation	1 bush. 36 lbs.	$ 6 32 per bush.	$ 8 02 per bush.
Wheat after wheat in 3-year rotation	1 bush.	7 73 per bush.	9 97 per bush.
Wheat after fallow in 5-year rotation	3 bush. 36 lbs.	2 87 per bush.	3 58 per bush.
Oats after wheat taken as green feed in 5-year rotation	1,200 lbs.	15 52 per ton.	20 68 per ton.
Oats as green feed for hay crop	800 lbs.	26 29 per ton.	35 46 per ton.
Hay, rye grass	800 lbs.	13 26 per ton.	13 85 per ton.

Shaunavon.—Operator, Neil McLean. The spring opened here a little later than usual, and there was not much moisture in the subsoil owing to the dry season of 1918. Seeding was started April 25 and some showers helped to start germination so that the wheat made a good start and oats fair. Dry weather with warm winds soon set in and continued through the growing season with scarcely any rain. The crops were practically a failure, only a small quantity of green feed being taken from some of the fields.

Tugaske.—Operator, R. Wilson. The spring was later than usual in this district and seeding of wheat on the Station was started May 2. There was a good supply of moisture and a fine firm seed bed. All grain made a good start, but dry weather later delayed the growth somewhat, but rains came in time to prevent much damage. Crops were fairly good and harvest was early, both wheat and oats matured by August 7. Wheat sown May 2, ripened August 7, and oats sown May 9, ripened by August 7. Cost of summer-fallowing two fields, a total of 10 acres, was $5.62 per acre, standard, and $7.01 per acre, actual.

—	Yield per acre	Standard cost	Actual Cost
Wheat after fallow in 3-year rotation	18 bush. 48 lbs.	$0 65 per bush.	$0 76 per bush.
Wheat second field crop in 3-year rotation	15 bush. 48 lbs.	0 74 per bush.	0 87 per bush.
Wheat after fallow in 5-year rotation	16 bush. 12 lbs.	0 73 per bush.	0 85 per bush.
Oats after wheat in 5-year rotation	38 bush. 13 lbs.	0 31 per bush.	0 32 per bush.
Hay in 5-year rotation	1 ton.	5 62 per ton.	6 54 per ton.
Hay in 5-year rotation	1 ton.	5 62 per ton.	6 54 per ton.

Weyburn.—Operator, E. Meredith. The spring opened here a little later than usual with a fairly good supply of moisture. Seeding was started about April 20, and the grain germinated well. Weyburn experienced one of the driest years in her history, and as a result, harvest was early, and crops light. Cutting of wheat was started on July 30. Late rains helped the late oat crop and thus relieved the feed situation. Wheat sown April 22, ripened July 30, and oats sown May 17, ripened August 11. Cost of summer-fallowing two fields, a total of 10 acres, was $5.09 per acre, standard, and $7.37 per acre, actual.

—	Yield per acre	Standard Cost	Actual Cost
Wheat after fallow in 3-year rotation	6 bush. 30 lbs.	$1 63 per bush.	$2 09 per bush.
Wheat after wheat in 3-year rotation	6 bush 30 lbs.	1 39 per bush.	1 81 per bush.
Wheat after fallow in 5-year rotation	6 bush	1 53 per bush.	2 07 per bush.
Oats after wheat in 5-year rotation	24 bush. 17 lbs.	0 35 per bush.	0 44 per bush.
Oats in place of hay in 5-year rotation	26 bush.	0 34 per bush.	0 42 per bush.
Oats in place of hay in 5-year rotation	27 bush. 17 lbs.	0 30 per bush.	0 39 per bush.

Zealandia.— Operator, W. M. Roberts. The spring was later than usual here and seeding of wheat was started April 24, and oats May 19. The seed went in under favourable conditions and the growth at first was promising but the season was so dry with hot winds in July that all crops suffered and were very light. Harvest was started on August 20. Late rains caused considerable new growth in the late oat crop. Wheat and oats were in the shock when the early snow came and winter set in. Cost of summer-fallowing three fields, a total of 15 acres, was $5.51 per acre, standard, and $6.90 per acre, actual.

ILLUSTRATION STATIONS IN QUEBEC

Aubrey, Chateauguay county.—Operator, Samuel Reddick. Four-year rotation.

Field A.—Clover hay and seed. Yielded 2½ tons of hay first cutting; actual cost $4 per ton and standard cost $3.30 per ton. There were 200 pounds of seed per acre, at an actual cost of 6 cents per pound and a standard cost of 6 cents per pound.

Field B.—Hay, two crops. Yielded 4 tons per acre, at an actual cost of $2.68 per ton, the standard cost being $2.66 per ton.

Field C.—Banner oats. Yielded 26 bushels per acre, at an actual cost of 68 cents per bushel and a standard cost of 59 cents per bushel. Straw estimated at 1,000 pounds per acre, at $6 per ton.

Field D.—Corn. Estimated yield 7·9 tons per acre; actual cost, $4.34 per ton, standard cost, $4.30 per ton.

It will be noticed that yields of grain and corn are very low. This is due to the late spring and to the excess moisture in the soil. This land affords an excellent opportunity for a tile drainage illustration.

The actual cost of manual labour was 20 cents per hour and for horse labour 7½ cents per hour.

As a result of the illustration work, Mr. Reddick has sold $1,500 worth of clover seed.

Cap Chat, Gaspé County.—Operator, Chas. F. Roy. Four-year rotation.

Field A.—Banner oats. Yielded 44⅔ bushels per acre. Estimated yield of straw, 4,000 pounds. Actual cost of oats 22 cents per bushel, standard cost being 19 cents per bushel.

Field B.—Oats. Yielded 44⅔ bushels per acre. Straw estimated yield, 4,000 pounds. Actual cost of oats, 22 cents per bushel, standard cost, 19 cents per bushel.

Field C.—Banner oats. Yielded 44⅜ bushels per acre. Estimated yield of straw, 4,000 pounds. Actual cost of oats, 22 cents per bushel, standard cost, 19 cents per bushel.

Lachute, Argenteuil County.—Operator, S. E. Smith. Four-year rotation.

Field A.—Clover Hay. Estimated yield, 3 tons per acre. Actual cost, $3.91 per ton, standard cost, $3.74 per ton. A second crop was taken off this field for seed, which crop gave a yield of 113½ pounds per acre.

Field B.—Banner oats. Yield 29½ bushels per acre. Straw gave an estimated yield of 1,500 pounds per acre. Actual cost of oats, 45 cents per bushel, standard cost, 37 cents per bushel.

Field C.—Corn. Estimated yield 16 tons per acre. Actual cost, $2.66 per ton, standard cost, $2.46 per ton.

Field D.—Pasture.

Charges for labour: Actual cost of manual labour, 21½ cents per hour, for horse labour, 10 cents per hour. Standard cost of manual labour, 20 cents per hour, for horse labour, 7 cents per hour.

Lac à la Tortue, Champlain County.— Operator, S. T. Lupien. Four-year rotation.

Field A.—Timothy hay. Estimated yield, 1¼ tons per acre; actual cost, $10.15 per acre or $ 8.12 per ton, standard cost, $9.68 per acre or $7.74 per ton.

Field B.—Banner oats. Yielded 15 bushels per acre. Straw yielded 1,500 pounds per acre. Actual cost of oats, 78 cents per bushel, standard cost, 55 cents per bushel.

Field C.—Clover hay. First crop yielded 50 pounds clover seed per acre and 1,500 pounds straw which was used as fodder. The actual cost was $6 per bushel and the standard cost $5.40 per bushel.

Field D.—Corn. Estimated yield, 11.42 tons per acre. Actual cost, $3.52 per ton, standard cost, $3.13 per ton. Estimated cost of manure used, $15 per acre. Height of corn between six and seven feet.

The soil on this Station is very light sand but splendid results are being obtained and the land is gradually improving.

The second turn of the four-year rotation is now started on this Station and crops are increasing.

Montmagny, Montmagny County.—Operator, F. G. Fournier. Four-year rotation.

Field A.—Banner oats. Yielded 29¾ bushels per acre. Estimated yield of straw, 2,600 pounds per acre. Actual cost of oats, 46 cents per bushel, standard cost 38 cents per bushel.

Field B.—Clover hay. Estimated yield, 1½ tons per acre. Actual cost, $6.50 per ton, standard cost, $6.34 per ton.

A crop of seed was grown on this field.

Field C.—Banner oats. Yielded 20 bushels per acre. There were 2,600 pounds of straw. Actual cost of oats, 70 cents per bushel.

Field D.—Hay. Estimated yield, 1¼ tons per acre. Actual cost, $8.32 per ton, standard cost, $8.11 per ton.

A heavy hailstorm damaged the grain crop on the Station, lessening the yields about one-half.

New Carlisle, Bonaventure County.—Operator, E. M. Legallais. Four-year rotation.

Field A.—Hay. Estimated yield, 3 tons per acre. Actual cost, $4.61 per ton, standard cost, $4.53 per ton.

Field B.—Oats. Yielded 53 bushels per acre, actual cost being 41 cents per bushel, standard cost, 37 cents per bushel. Straw yielded 1,500 pounds.

Field C.—Potatoes. Yielded 350 bushels per acre. Actual cost, 47 cents per bushel, standard cost, 46 cents per bushel.

Field D.—Hay. Estimated yield 3 tons per acre. Actual cost, $4.61 per ton, standard cost, $4.53 per ton.

The actual cost of manual labour was 20 cents per hour and of horse labour 10 cents per hour.

An application of fish was applied to Field D and gave very good results.

New Richmond, Bonaventure County.—Operator, J. B. Cyr. Four-year rotation.

Field A.—Hay. Estimated yield, 1 ton per acre. Actual cost, $11.21 per ton, standard cost, $9.91 per ton. This field was seeded before the illustration work was commenced.

Note the difference in yield and cost later.

Field B.—Banner oats. Yielded 31¼ bushels per acre. Estimated yield of straw, 1,000 pounds. Actual cost of oats, 62 cents per bushel, standard cost, 41 cents per bushel.

Field C.—Banner oats. Yielded 31¼ bushels per acre. Estimated yield of straw, 1,000 pounds. Actual cost of oats, 51 cents per bushel, standard cost, 38 cents per bushel.

Field D.—Hoed crops. Turnips: Yield, 18½ tons per acre; actual cost, $2.88 per ton, standard cost, $2.18 per ton. Corn: Estimated yield, 12½ tons per acre; actual cost, $4.57 per ton, standard cost, $3.54 per ton.

Charges for labour: actual cost of manual labour, 30 cents per hour, for horse labour, 15 cents per hour. Standard costs: 20 cents per hour for manual labour and 7 cents per hour for horse labour.

Rimouski, Rimouski County.—Operator, Nazaire Begin. Four-year rotation.

Field A.—Potatoes. Yielded 250 bushels per acre. Actual cost, 39 cents per bushel, standard cost, 32 cents per bushel. Fish was used as a fertilizer on this field.

Field B.—Hay. Estimated yield, 2 tons per acre. Actual cost, $4.72 per ton, standard cost, $4.46 per ton.

Field C.—Banner oats. Estimated yield, 40 bushels per acre. Straw yielded 1,700 pounds per acre. Actual cost, 37 cents per bushel, standard cost, 35 cents per bushel.

Field D.—Hay. Estimated yield, 1½ tons per acre. Actual cost, $8.32 per ton, standard cost, $7.65 per ton.

Three-year rotation.

Field A.—Pasture.

Field B.—Hoed crop. Potatoes: Yielded 355 bushels per acre. Actual cost, 45 cents per bushel, standard cost, 41 cents per bushel. Turnips: Yielded 475 bushels per acre. Actual cost, 15 cents per bushel, standard cost, 12 cents per bushel. Corn: Estimated yield 10 tons per acre. Actual cost, $5.41 per ton, standard cost, $4.75 per ton.

Field C.—Banner oats. Yielded 53 bushels per acre and 1,700 pounds of straw per acre. Actual cost of oats, 31 cents per bushel, standard cost, 24 cents per bushel.

Stanbridge East, Missisquoi County.—Operator, C. S. Moore. Four-year rotation. Drained Land.—

Field A.—Banner oats.—Yielded 33.8 bushels per acre. Straw estimated at 1,500 pounds per acre. Actual cost of oats, 42 cents per bushel, standard cost, 32 cents per bushel.

Field B.—Hoed crop. Turnips yielded 15¼ tons per acre, at an actual cost of $3.05 per ton, the standard cost being $2.92 per ton. Mangels yielded 21½ tons per acre, actual cost being $2.16 per ton, standard cost, $2.07 per ton.

Field C.—Hay. Estimated yield 1.9 tons per acre, at an actual cost of $5.87 per ton, standard cost of $5.58 per ton.

Field D.—Hay. Estimated yield 2.7 tons per acre. Actual cost, $4.83 per ton, standard cost, $4.47 per ton.

Undrained Land.—

Field E.—Hay. Estimated yield 1 2/5 tons per acre. Actual cost, $9.14 per ton, standard cost, $8.62 per ton.

Field F.—Hay. Estimated yield 1 2/5 tons per acre, actual cost being $3.95 per ton standard cost, $8.53 per ton.

Field G.—Corn. Estimated yield, 7 tons per acre. Actual cost being $3.95 per ton, standard cost, $5.17 per ton.

Field H.—Banner oats. Yielded 31½ bushels per acre, 1,500 pounds straw. Actual cost, 45 cents per bushel of oats, standard cost, 37 cents per bushel.

The actual cost of manual labour was 18 cents per hour; of one horse, 33 cents per hour, and of a two-horse team, 48 cents per hour, including man. Standard cost of manual labour, 20 cents per hour, of horse-labour, 7 cents per hour.

Note.—In 1918 seed sown on drained land produced 24.09 bushels more than that sown on undrained land. Taking $1 as price of seed per bushel, the difference is $24.09.

It will be noticed that the difference has not been so great in 1919, the reason being the special preparation of the land and the exceptionally favourable weather for crop production on low lands.

St. Julie, Verchères County.—Operator, L. Hebert. Four-year rotation.

Field A.—Banner oats. Yielded 46 bushels per acre with 1,500 pounds of straw, at an actual cost of 30 cents per bushel, the standard cost being 25 cents per bushel.

Field B.—Hoed crop. Corn: Estimated yield of 14 tons per acre, at an actual cost of $3.26 per ton and a standard cost of $2.99 per ton. Swedes: Yielded 7½ tons per acre, actual cost being $3.26 per ton and a standard cost of $2.99 per ton.

Field C.—Clover Hay. Estimated yield 3½ tons per acre, actual cost being $4.08 per ton, standard cost, $3.57 per ton.

This field yielded 93 pounds of clover seed per acre, at a cost of 11 cents per pound, making a profit of $45.57 per acre.

Field D.—Hay. Estimated yield per acre 1½ tons; actual cost, $6.38 per ton, standard cost, $6.22 per ton.

Charges for labour: actual cost of manual labour 22½ cents per hour, horse labour 10 cents per hour.

St. Gedeon, Chicoutimi County.—Operator, Wilfred Simard. Four-year rotation.

Field A.—Hay. Estimated yield, 2½ tons per acre. Actual cost, $4.32 per ton, standard cost, $3.88 per ton.

Field B.—Banner oats.—Yielded 23 bushels per acre. Straw estimated at 1,000 pounds per acre. Actual cost, 54 cents per bushel, standard cost, 44 cents per bushel.

Field C.—Potatoes. Yielded 246 bushels per acre; actual cost, 40 cents per bushel, standard cost, 35 cents per bushel.

Field D.—Hay. Estimated yield 1½ tons per acre; actual cost, $7.65 per ton, standard cost, $7.38 per ton.

Charges for labour: Actual cost of manual labour, 23 cents per hour, for horse labour, 10 cents per hour. Standard cost for comparison: manual labour, 20 cents per hour, horse labour, 7 cents per hour.

St. Clet, Vaudreuil County.—Operator, L. Besner. Four-year rotation.

Field B.—Corn. Yielded 12 tons per acre. Actual cost, $2.67 per ton, standard Actual cost of oats, 49 cents per bushel, comparative or standard cost, 45 cents per bushel.

Field B.—Corn. Yielded 12 tons per acre. Actual cost, $2.67 per ton, standard cost, $2.60 per ton.

Field D.—Hay. Yielded 2¼ tons per acre. Actual cost, $2.37 per ton, standard cost, $2.31.

The oats suffered greatly from rust.

L'Assomption, L'Assomption County.—Operator, J. Papin. The land at L'Assomption is in preparation for commencing a four-year rotation in 1920.

ILLUSTRATION STATIONS IN QUEBEC, 1920

Illustration Stations which will be in operation in 1920 have been selected at the following points in Quebec:—

Buckingham, Ottawa county. Operator, E. Brady.
St. Etienne des Gres, St. Maurice county. Operator, T. Bournival.
St. Tite, Champlain county. Operator, N. Delisle.
Pierreville, Yamaska county. Operator, S. Traversy.
Weedon, Wolfe county. Operator, J. Allard.
Plessisville, Megantic county. Operator, E. Jutras.
St. Casimir, Portneuf county. Operator, E. St. Germaine.
St. Malachie, Dorchester county. Operator, R. Tremblay.

ILLUSTRATION STATIONS IN NOVA SCOTIA, 1920

Illustration Stations have been selected at the following points in Nova Scotia, and will be in operation in 1920:—

Big Baddeck, Victoria county. Operator, J. A. Kiley.
Kennetcook, Hants county. Operator, Norman Neil.
Mabou, Inverness county. Operator, Duncan Boyle.
New Glasgow, Pictou county. Operator, Geo. Fraser.
Sydney, Cape Breton county. Operator, Daniel Morshead.
Tatamagouche, Colchester county. Operator, Galvin Clark.

ILLUSTRATION STATIONS IN NEW BRUNSWICK, 1920

Illustration Stations have been selected at the following points in New Brunswick, and will be in operation in 1920:—

Apohaqui, King's county. Operator, Jas. Manchester.
Middle Coverdale, Albert county. Operator, H. E. Mitton.
Millville, York county. Operator, P. Graham.
Rexton, Kent county. Operator, J. D. Dickinson.
Woodstock, Carleton county. Operator, E. W. Turner.

DIVISION OF EXTENSION AND PUBLICITY

REPORT OF THE OFFICER IN CHARGE, W. A. LANG

The work of the Division of Extension and Publicity during the past year consisted, as in previous years, in the preparing and staging of exhibits at fall fairs, poultry shows, seed fairs and corn shows, etc., in the distribution of literature at these different exhibitions, and in attending to applications for literature, which have been received through the mails and at exhibitions and fairs during the year.

Early in 1919 the chief of the division was sent by the Department of Trade and Commerce with a combined exhibit to the Industrial Fair at Lyons, France, and was absent from Canada until August.

The exhibit from the Department of Agriculture, Canada, to the Lyons Fair consisted of a display of Canadian apples, whose size, variety, and colour evoked the highest admiration; grapes, pears, and peaches, preserved in alcohol in transparent glass jars were also a notable addition to the fruit display. Sheaf samples of Canadian grains, specimens of flax, hemp, wool, flour, etc., were also exhibited and to add to the attractiveness of the exhibit large lighted transparencies were used to illustrate such subjects as Canadian sheep-rearing, wheat fields, fruit-growing, etc.

A general exhibit was prepared at the Central Farm and sent out to cover the provincial fairs in Western Canada, held at Regina, Calgary, Edmonton, Saskatoon, and Brandon. This exhibit was supplemented by local exhibits from the Branch Farm in the district in which the exhibition was held.

Exhibits consisting of recommended old and new varieties of cereals, models of poultry houses and equipment, models of live-stock buildings, together with attractive backgrounds with instructive legends and coloured transparencies, were prepared at Ottawa and sent to the following places in Ontario: Woodville, Orangeville, Listowel, Mitchell, Milverton, Thorndale, Avonmore, Newington, Norwood, Bowmanville, Metcalfe, and Russell. Larger exhibits of the same style were staged at London and Ottawa exhibitions.

During the fall and winter months, a special poultry exhibit was sent to the poultry shows at Toronto, Niagara Falls, Sarnia, Owen Sound, Peterborough, Paris, Oakville, Beamsville, St. Catharines, and Pictou. This exhibit was an arrangement of pillars holding coloured transparencies of different varieties of fowl, poultry houses, etc., appropriate legends, display of different poultry feeds, and models of poultry houses and appliances, etc., that had been given a trial and found satisfactory on the various Branch Farms. Live fowl were also exhibited with timely hints for their care and management.

A special grain exhibit, emphasizing corn-growing in western Ontario, was staged at the Chatham Corn Show.

As the same exhibit structures had been at some of the Branch Farms for a number of years, it was thought advisable to have these changed, and during the month of January the structures from Saskatchewan, Alberta, and British Columbia were assembled at Lethbridge, where the British Columbia exhibits were repaired, revarnished, and the legends changed to suit the Prairie Provinces, and the prairie structures changed to suit British Columbia. They were then reshipped to the different Farms.

During the fair season in the different provinces, each Farm was made a centre from which exhibits were sent out. Local material such as grain, threshed, and in the sheaf, grasses, flowers, fruit, etc., were added to the models and structures at the Branch Farms, and thus a complete exhibit was staged as follows:—

Charlottetown, Experimental Station exhibited at Charlottetown, Souris, Georgetown, and Summerside; Fredericton Station at Fredericton, Woodstock, and Chatham; Nappan Farm at Oxford and Shubenacadie; Lennoxville Station at Sherbrooke, Brome, and Ste. Scholastique; Cap Rouge Station at Three Rivers, Quebec City, St. Romuald, St. Michel, and Baie St. Paul; Morden Station at Plenty, Zealandia, Alsask, Kindersley, Bounty, Maclin, Lussland. At the Brandon Farm live-stock exhibits were sent to the provincial summer and winter fairs at Brandon, and championship and other prizes were won. The Indian Head Farm sent exhibits to the Regina summer and winter fairs, Sintaluta, Indian Head, and the Swift Current poultry show. In British Columbia, the Summerland Station exhibited at Kamloops, Armstrong, Kelowna, New Westminster, Peachland, Penticton, Naramata, Summer-

land; Invermere Station at Cranbrook, Creston, Nelson, Trail, Kaslo; the Sidney Station at Vancouver, New Westminster, Duncan, and Kamloops; and Agassiz Farm contributed to the combined exhibit at New Westminster and Vancouver.

Due to the scarcity of help at some of the Farms and Stations, it was found impossible to do any exhibition work.

During the year, a large number of applications for literature, both exhibition circulars and bulletins, were received and attended to by the division.

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

REPORT OF THE SUPERINTENDENT, J. A. CLARK, B.S.A.

THE SEASON

The winter of 1918-19 was exceptionally mild. The "freeze-up" occurred on November 26, and sufficient snow for sleighing fell early in December. This remained on the ground throughout the winter. There were very few storms, and no heavy thaws. The month of April was cold and backward. The fields were dry enough to plough, but were not fit to seed until after the middle of May. The grass wintered well, and gave excellent crops of hay and pasture. No frost occurred in June, which was very unusual. June and July were very favourable for all crops except corn, which started slowly. Haymaking was somewhat retarded by rainy weather, but most of the crop was saved in good condition. Grain crops were so heavy that considerable lodging occurred. September was a very favourable harvest month, and the grain went in the barns in splendid shape. Potato tops were first killed by a frost on the 15th of September. The fruit crop was above the average. October was showery, but favourable for autumn work. The first killing frost occurred on the 8th of October. Potatoes, which were a heavy crop, were stored in good condition. The pastures remained good late into the autumn. A severe frost occurred on the 16th of November, but the plough was still going at the end of the month, and winter did not commence until about the middle of December, when a very severe cold wave sent the thermometer down to 14 degrees below zero. January and the first half of February were exceptionally cold, with very little sunshine. A heavy gale occurred on the 19th of February, which unroofed a great many barns and broke a great many trees. The thaw that occurred at this time rendered the country roads impassable for several days. The first part of March was cold, and it was not until the 23rd that the snow cleared off the fields. Another heavy freshet occurred on that date, destroying a great many mill-dams.

METEOROLOGICAL RECORDS—1919-20

—	Temperature Fahrenheit					Total	Bright Sunshine
	Maximum		Minimum		Mean		
	Date	Degree	Date	Degree	Degree	Inches	Hours
1919							
April	25 & 28	55	10	23	37·965	4·09	100·2
May	24	74	2	27	47·903	2·91	215·2
June	26	83	2	34	59·233	2·22	230·5
July	5 & 18	81	9	39	64·064	3·29	208·9
August	5 & 6	78	12	41	63·915	4·13	209·3
September	22	75	16	36	56·95	4·78	151·2
October	1	65	21 & 31	26	44·048	3·71	113·8
November	30	55	29	10	26·683	3·17	52·
December	1	55	17	−14	19·112	2·60	86·1
1920							
January	18	35	31	−17	8·115	1·45	87·9
February	6	44	1	−15	20·517	4·81	73·2
March	26·	60	3	− 7	29·483	4·75	130·4
Totals	.....	.....	.....	.....	.....	41·91	1,658·7

LIVE STOCK

Horses

The draught horses at this Station at the close of the year, consisted of 3 pure-bred Clydesdale mares, one Clydesdale foal and a Clydesdale gelding, 3 grade draught mares, a grade draught gelding, and in addition to these, one express horse. During the year, 2 grade draught mares were purchased, and the driving mare sold in the autumn to provide stable room for the other horses. The horses are in a good healthy condition, and ready for the spring work.

Dairy Cattle

During the year 5 pure-bred Ayrshire cows were purchased for the Station: Diana, No. 39321, Sylvia of Glenholm, No. 42135, Buttercup of Glenholm, No. 56491, Pandora of Glenholm, No. 35104, and Lily of Melrose, No. 30634. These, with Lily Helen, No. 53710, and her calf, Ravenwood Victoria, No. 66314, and the Ayrshire bull Ottawa Ivanhoe, No. 60140, constitute our pure-bred Ayrshire herd. The grade cow "Jessie" was slaughtered during the year, as she had reacted to the tuberculin test.

Beef Cattle

Four pens of cattle were purchased December 1, 1919, and fed an equal amount of hay, turnips and grain for 115 days. Pen I were scrub, dry cows, Pen II were Shorthorn and Shorthorn grade cows, Pen III were grade Shorthorn steers and Pen IV were grade dairy steers. The following table gives the purchase price, weights, gains, sale price, cost of feed, total cost and profit or loss.

BEEF FEEDING EXPERIMENTS

No. of pen	Weight Dec. 1, 1919	Weight Mar. 24, 1920	Gain	Cost per cwt. Dec. 1	Average sale price per cwt. Mar 24	Range of price for similar stock, Toronto, Mar. 24, per cwt.	Cost of feed	Total cost	Profit or loss
I	3,560	3,900	340	$8 62	$11 35	$10 00 to $10 50	$ 162 27	$ 469 14	*$26 69
II	4,285	4,780	495	9 50	11 55	10 50 to 11 00	162 27	569 35	*17 36
III	3,690	4,585	895	10 00	12 88	12 00 to 12 50	162 27	531 27	59 38
IV	3,340	4,190	850	9 85	12 52	11 50 to 12 00	162 27	491 26	33 46
Totals	14,875	17,455	2,580	9 49 average	12 08 average	11 25 average	649 08	2,061 02	48 79

*Loss

From this experiment it is evident that in Prince Edward Island, where dry cows bring a high price for fox feed in the autumn, it does not pay to try to fatten them. The average loss per Shorthorn grade cow was $4.34, and the average loss on the scrub dry cow was $6.67. On the other hand it does pay to feed a good type of steers. The Shorthorn grade steers gave a profit of $14.85 and the dairy grade steers a profit of $8.36 each.

Swine

The three grade sows were fattened and marketed. The breeding sows were wintered in a hog cabin 8 feet by 10 feet. One sow contracted pneumonia and died. Heavy storms had blocked up the runway so that she did not have enough exercise. The others came through in good shape and gave litters averaging 8 pigs each.

An experiment in feeding wheat screenings to pigs over two months old, indicated that a considerable amount or about one-third screenings could be safely substituted for mill feeds.

POULTRY

The poultry plant was enlarged to include more yard space so that the chickens could run on new ground. Seven additional contest houses were built. These were used for rearing chicks during the brooding season.

The total number of chicks hatched in March, April and May, 1919, was 2,032. Of these, 801 were sold when a day old, 907 were reared to maturity with a death loss of 324; 367 pullets were transferred to the laying pens, cockerels were sold for breeding stock or retained for mating in the breeding pens. There were 43 culls and 449 broilers and chickens that sold at an average of 75 cents each.

A Record of Performance was kept of all the birds on the Station and those that made the best records were used as breeding stock.

The eleven laying and breeding pens were made up of 79 hens and 337 pullets as follows:—

	Pullets	Hens	Males
S.C. White Leghorns	262	58	18
Barred Plymouth Rocks	75	21	14

The first Dominion Egg Laying Contest was completed on September 30, 1919, with the pen owned by Mr. H. H. Dowton first in the heavy class for the largest revenue from sale of eggs over cost of feed. Mr. Thomas J. Adamson of Laurel, P.Q., was second in this class. In the light class, Mr. C. B. Chapman's pen of Amherst,

N.S., was first, with Mr. W. J. Pickard's pen of Wetaskiwin, Alta., second. Mr. T. J. Adamson won the cup for the hen laying the largest number of eggs during the contest, size and weight being considered. Mr. W. E. B. Tait's hen of Dorchester, N.B., was second, and Mr. C. B. Chapman's hen third. Rev. J. J. McDonald won first place for the best Prince Edward Island pen.

The Barred Plymouth Rock pens led in production and also in average per bird.

Thirty-seven birds qualified for Record of Performance.

Twenty-two pens of ten birds each are entered in the 1919-20 Prince Edward Island Egg Laying Contest, which will be conducted for 52 consecutive weeks. There are nine pens of Barred Plymouth Rocks, eight pens of White Leghorns, two pens of White Wyandottes, and one each of Rhode Island Reds, Silver Wyandottes and Speckled Sussex. There are sixteen pens from Prince Edward Island, four from Nova Scotia and two from Quebec.

BEES

The two colonies of Italian bees increased to four during the summer. These were wintered in a four-colony case out of doors. One colony was lost while moving it late in the autumn by the combs melting down with heat generated by a very strong colony on a warm day. The others wintered well without artificial feeding. An Act for the Prevention of Infectious and Contagious Diseases and for Instruction in Bee-keeping, was prepared for the Provincial Government and passed at the session of 1920.

FIELD CROPS

The field crops on the rotations gave the following average yield per acre:—

	Acres	Bushels	Pounds
Barley, Charlottetown No. 80	6	51	9
Oats, Banner	2	69	21
Wheat	3	26	20
Potatoes	3½	235	21
		Tons	
Mangels	1	17	1,175
Turnips	1	13	960
Clover hay	13	2	378
Timothy hay	3	3	1,382

CULTURAL PLOTS

The cultural work on over three hundred plots was continued. The season was favourable and much valuable data were obtained.

CEREALS

Twenty-five varieties of cereals were tested in duplicate on uniform test plots, and records of habit of growth and yields recorded. Mass selection is carried on each year using the uniform test plots for the hand selected plots under the Canadian Seed Growers' Association regulations. Multiplying plots are grown each year from this seed. They are carefully rogued and the seed inspected by a Canadian Seed Growers' Association inspector before it is sold to farmers. Two varieties of wheat deserve special mention, viz., Early Red Fife, which over a period of many years has shown itself to be well suited to this province, and Huron, a bearded sort of hard wheat, that withstands the wheat scab and glume spot diseases better than most other sorts.

Banner oats, that is so favourably known throughout the province, is a good reliable sort and merits first place, which it now holds. Daubeney, an early ripening variety, gave a full crop for the first season in many years.

The barley crop shows a considerable increase and the demand for a late ripening barley is increasing. For this purpose the Charlottetown No. 80, a deciduous awned, two-row sort is strongly recommended. It ripened in 102 days, or at the same date as Banner oats. This sort is now largely sown in the province, replacing the six-row varieties with the tenacious awns. It seems probable that the 62 per cent increase in acreage and the 15·8 per cent of increase in the yield throughout the province may be attributed to this most promising sort which was originated at this Station. The O.A.C. No. 21 maintained its position as one of the best of the six-row sorts.

FORAGE CROPS

Roots

Fifty-five lots of mangels were sown in uniform test plots to test out commercial seed from different sources. The home-grown seed from the different provinces did not show up as favourably as usual. Home-grown seed had led in yield for a number of years, but in 1919 the best was thirty-seventh in our list.

The turnips were quite badly injured by club-root wherever grown without a liberal application of lime. Sugar beets gave an average yield. The carrots were almost completely destroyed by the carrot rust fly.

Corn

The season was unfavourable for ensilage corn. Very few varieties matured beyond the tasseling. The average yield was 6¾ tons.

Grass and Clover Mixtures

The following general conclusions have been arrived at after observing 28 grass and clover mixtures for four seasons: Timothy is the standard hay grass, western rye grass is unsuitable for Prince Edward Island, orchard grass and meadow fescue are both promising pasture grasses, sown either alone or together, with or without clover. Tall oat grass fails to persist after the first year and is of doubtful value. Kentucky blue grass is unsuitable to land infested with natural grasses, but on clean land with clover it did fairly well. Red top is a vigorous persistent grass naturally adapted to the soil, and once started it keeps gaining in strength and vigour. Its value, however, is as a bottom grass for pasture purposes and the present commercial sort could be greatly improved if special pasture strains with thick bottom growth were developed.

Root Seed Production

Root seed was produced on a commercial scale and a satisfactory yield obtained The seed did not mature quite as evenly as we would like to have had it, and it was slightly undersized. The following quantities were grown and sent to the Central Experimental Farm for recleaning with the best machinery:—

Name	Pounds
Half Sugar White mangel	11,363
Yellow Intermediate mangel	1,747
Yellow Intermediate mangel (Charlottetown selection)	1,060
Champion Swede turnip	2,286

HORTICULTURE

Tree Fruits

The orchards of apple, cherry and plum which have grown slowly since planting in 1910 did very much better in 1919. It was found that the young trees had been lifted by the frost the first few years and that the roots were too close to the surface. The remedy applied was the ploughing of soil towards the trees and the banking of the individual trees to some extent with soil. The result has been marked in the growth. The pear orchard which was moved and reset more deeply a number of years ago, has grown much better than the other orchards. The orchards were sprayed regularly and kept free from disease and insects. A small proportion of the trees fruited and gave fruit of good quality.

Small Fruits

Prince Edward Island is adapted to the production of small fruits and the many varieties of strawberries, raspberries, gooseberries, and currants did well. Raspberries regularly produce a full crop if given reasonable attention, and the demand for this fruit is much greater than the supply.

Trees, Shrubs, Flowers and Lawns

The approach to the Station is steadily improving from year to year as the scheme of planting is more fully developed. The general effect at present is very beautiful, with the Station buildings as the center of a landscape and the several groves, shrubs and flowers as the setting round about. The severe winter of 1919 killed quite a number of shrubs that were considered hardy here before. This was probably caused by the very low temperatures of December before the snow came.

The flowers are one of the greatest attractions for visitors to the Station. These were very fine throughout the entire season. The pond lilies, sweet peas, dahlias and the beds of perennial flowers merit special mention.

Vegetables

Cultural and variety tests were conducted with all the leading varieties of vegetables in the field and garden. Over seventy-five sorts of potatoes were grown and a record kept including the percentage of leaf roll and mosaic diseases present. Among the few varieties that were free from these diseases was the McIntyre. An attempt is being made to locate disease resistant potatoes in order to overcome these diseases which are at present taking such a heavy toll from the potato crop. The outstanding vegetables for the season were: Celery, tomatoes, beans and peas. The celery deserves special mention. It was grown in trenches and produced a full crop which wintered well, some stalks being available for seed purposes in 1920.

BUILDINGS

An office building 30 by 30 feet was constructed just west of the Superintendent's residence. This is a frame building, with a concrete basement, including a vault for the storage of records. The first floor has a main office 29 by 14 feet, the Superintendent's office, 14 by 14 feet, and a hallway with closets. The second floor is used as a general workroom, for the selection of grain, and for the preparation of exhibition material, etc.

Seven contest houses were constructed for the egg-laying contest.

UNDERDRAINAGE.

The underdrainage systems have worked very satisfactorily, with only a few broken tile which require to be replaced.

PICNICS, DEMONSTRATIONS AND AGRICULTURAL MEETINGS

A number of farmers' picnics were held at the Station during the summer. The number coming by automobiles for this purpose has greatly increased. The Prince of Wales students also held their annual picnic at the Station and later attended several demonstrations there.

The Superintendent gave a series of lectures at the short courses throughout the province and at the classes in home economics held at Charlottetown from time to time. A course of lectures on horticultural subjects was also given to the dependents of the returned men, under the auspices of the Soldiers' Settlement Board.

Addresses were also delivered before the Central Farmers' Institute at Charlottetown, and the Nova Scotia Farmers' Association of Kentville.

The Superintendent also attended the several live-stock conventions in the province, the Maritime Provinces and the Dominion live-stock conventions in Toronto. He attended the Toronto International Exhibition and the Maritime Fat Stock Show.

EXHIBITIONS

Exhibits were prepared and shown at the provincial exhibition at Charlottetown late in September, and at the county exhibitions at Souris, Georgetown and Summerside the last week of September and the first week in October. A very fine display of descriptive panels and models was shown together with the natural and preserved specimens of the products of the Charlottetown Station. The attendance was good, the weather favourable and the Farm booth was one of the big features of all the exhibitions held in the province.

EXPERIMENTAL STATION, KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT, W. SAXBY BLAIR

THE SEASON

April opened up with no snow on the ground and the frost pretty well all out. There were heavy rains during March but this had been fairly well dissipated by the first of April. Rain fell on eighteen days during the month; this, with three light snowfalls which melted as they fell, resulted in the ground being about as wet at the end of the month as at the beginning. However, light lands which drained readily were in good condition for ploughing after the middle of April and the first work on land was done at this Station on April 24. The temperature was about normal. Clovers and grasses came through the winter in excellent condition.

There was almost uninterrupted fine weather during May to the last week and the precipitation up to that time being light, farming operations were pushed along without a stop. As a result, much more work on land was possible during the month than in any other previous year.

The crops seeded and grasses and clover came on rapidly showing every indication of conditions being ideal for their growth. The temperature was about 2 degrees above normal, which greatly aided in crop development. A rain of 1·13 inches on the 25th and 26th, which fell gradually, was all taken up by the soil. The sunshine was a little above normal which also helped materially in crop growth. There was frost on the 10th and again on the 15th, 16th and 17th, which was the last of the season. All seeding and the planting of practically all crops had been completed by the first of June at this Station. Never before has it been possible to complete this work so early in the season.

June was also a favourable month. There was no rainfall, except two light showers, until the 20th. This made it possible to do very much more work on damp land than is usual. Toward the end of the month the land was pretty dry, but seasonable showers at that time helped out crops and they continued to make strong growth. Fruit trees were in full bloom on June 4 and the weather being dry with a high temperature during the blossoming period favoured a good set of fruit. The amount of bloom was unusually large and indications pointed to a large fruit crop. A period of dull weather with considerable humidity favoured apple scab development from the 10th to the end of the month and trees not sprayed early developed considerable spotted fruit. The sunshine during the month was above the average. The rainfall was not as great as usual for June, but all the water which fell was absorbed by the ground, which is usually not the case. Heavy rains of short duration are generally lost by surface drainage.

During the first of July crops on naturally dry lands suffered for want of moisture, but after the 6th seasonable showers supplied crops to their requirements. The month was generally favourable throughout for all crops. Clover which was cut early was gathered in fine condition and was a splendid crop of good quality, but because of wet weather during the latter part of the month haying operations were very much hampered.

The early part of August was favourable for haying and hay generally was gathered in good condition, but in some cases because of shortage in help this operation was drawn out well into the grain harvest. The first cutting of grain started on the 16th. Dull and unfavourable weather followed until the 13th of September; this was a great drawback as early seeded grain from large areas had to be handled several times to get it into a condition for threshing or storing. Fortunately the rains in the aggregate were not great and little damage to crops resulted in this section, although in some places the grain was injured considerably.

The first half of September was wet, after which it came in dry and farmers had an opportunity to gather all late grain crops without loss. The first frost of the fall was on the 16th when 1 degree was recorded. Traces of this frost were noticeable only in places at this Station, but in some sections tender crops were badly damaged. The corn crop was exceptionally good and was gathered during the last week in September in excellent condition.

The month of October was cold, the temperature being about 3 degrees lower than the average. There were 7, 8, 7, 5, 2, 12, 6, 3, 9 and 6 degrees of frost on the 2nd, 9th, 13th, 14th, 18th, 20th, 24th, 29th, 30th and 31st, respectively. The worst frost was on the 20th and this did much injury to unpicked apples in many places. The fruit, generally, because of the frost, seemed to mature prematurely, making it necessary to use greater care in handling it than is usually the case. Because of the very large crop, shortage of efficient picking help, scarcity of barrels and the presence of the cold weather the harvesting was delayed later than usual, but in spite of this handicap all the crop was secured in fairly good shape by the last of the month and very little loss resulted. To add to the troubles of apple gathering rain fell on 15 days during the month, hindering fruit harvest very much. These rains were not excessive, however, and ploughing could be followed up as time permitted.

The rainfall during November was normal, the heaviest being 2·61 inches on the 6th, which held up ploughing for a period except on sandy areas. There were light snowfalls on the 15th, 20th and 27th, which melted soon after falling. There was no very cold weather during the entire month and ploughing was not interrupted because of frost to the end of the month. After the 30th no work was done on the land.

December has been cold, the mean temperature being 5 degrees lower than the average. The snowfall has been light but with the temperature low and the rain forming ice as it fell, sleighing was possible at certain periods. Toward the end of the month the roads became good for sleighing and continued good throughout the winter. The temperature went below zero on 8 days, the lowest being 11 degrees below on the 18th.

January was cold, the mean temperature being 10.105 degrees, while 21.28 was the average for this period during the five previous years. The thermometer went below zero on 14 nights, the lowest being 19 degrees below on the 26th. There is no record of a more severe January and frost penetrated cellars formerly considered frost-proof. There was no rain during the month and the precipitation reported was from melted snow. The snow aggregated 27 inches and only for this snow the frost would have penetrated much more deeply into the soil and even as it is, water pipes considered well below the frost line have been frozen. There have been no drifting snowstorms and roads in this section have not at any time been blocked. There was much more snow from Middleton to Yarmouth than in this section.

On the 1st of February the thermometer registered 24 degrees below zero; this is the lowest temperature recorded at this Station. After this there was no more zero weather, the remainder of the month being moderate and pleasant throughout with the mean temperature about normal. There were light snowfalls and the roads were fine for sleighing during the entire month. There were frequent heavy gales, and one in particular on the 19th did damage to buildings.

March on the whole was a fine month without the usual heavy snowstorms. Sleighing broke up on the 12th and 13th, when warm weather and a heavy rain of 1·85 inches caused severe floods which did much damage to bridges and roads. The temperature was higher than normal, although zero weather was recorded during the first week in March.

The meteorological records for the six months from April 1, 1919, as compared with the average for 1918, and the previous six years, are given in the following table:—

MEAN TEMPERATURE

Month	Average 1913 to 1918 inclusive	1918	1919
	°	°	°
April	39·17	38·74	40·43
May	48·29	53·97	50·17
June	57·66	57·58	59·58
July	64·95	65·43	65·03
August	64·08	61·80	63·19
September	56·76	58·56	58·

RAINFALL

Month	Average 1913 to 1918 inclusive	1918	1919
	Inches	Inches	Inches
April	2·61	0·89	3·28
May	2·17	1·21	2·48
June	2·796	2·30	2·25
July	2·998	4·99	2·77
August	2·64	1·72	2·21
September	3·43	8·06	3·13
Total	16·644	19·17	16·12

SUNSHINE

Month	Average 1913 to 1918 inclusive	1918	1919
	Hours	Hours	Hours
April	148·6	203·7	118·
May	173·6	224·6	200·4
June	208·7	214·9	244·85
July	217·6	197·8	221·98
August	212·5	234·2	191·77
September	179·9	165·8	158·45
Total	1,138·9	1,241·0	1,135·45

METEOROLOGICAL RECORDS, 1919–1920

Months	Temperature			Precipitation			Hours bright sunshine
	Maximum	Minimum	Mean	Rainfall	Snowfall	Total	
	Degrees	Degrees	Degrees	Inches	Inches	Inches in rainfall	
1919							
April	61	22	40·43	3·28	Melted	3·28	118
May	75	27	50·17	2·48	Melted	2·48	200·4
June	87	34	59·58	2·25	.....	2·25	244·85
July	86	37	65·03	2·77	.....	2·77	221·98
August	80	41	63·19	2·21	.....	2·21	191·77
September	82	31	58·	3·13	.....	3·13	158·45
October	66	20	45·2	3·93	.....	3·93	124·50
November	60	15	37·4	7·27	Melted	7·27	57·25
December	50	−11	20·8	2·66	9·00	3·56	83·8
1920							
January	38	−19	10·115	·21	27·00	2·91	59·85
February	52	−24	21·80	2·73	21·00	4·83	68·71
March	67	−10	31·09	2·42	6·25	3·04	123·45
Total	.....	.....	.....	35·34	63·25	41·66	1,653·01

LIVE STOCK

Shorthorn Cattle.—The registered Shorthorn stock on hand at the close of this year numbers 50 head, which consists of 1 herd bull, 22 cows, 8 heifers one year and over, 13 heifers under one year, and 6 bulls under one year. One cow Louisa May 2nd

and the old herd bull Jilt's Denis were disposed of for breeding purposes. Six young bulls were also sold during the year for breeding. Seven of the cows have qualified in the Record of Performance test, giving credible returns from twice a day milking with ordinary dairy care and regular yearly breeding. The R.O.P. production was as follows:—

Hedgyn Susan	7 yrs. old	7,534 lb. Milk	304 lb. Fat
Hillview Victoria	12 " "	6,596 " "	275 " "
Meadow Flower 24th	11 " "	6,786 " "	257 " "
Meadow Blossom	10 " "	6,283 " "	259 " "
Meadow Princess	11 " "	6,074 " "	271 " "
Kentville Jessamine	5 " "	5,930 " "	238 " "
Kentville Fairy	2 " "	4,601 " "	217 " "

This is an average of 6,257·7 pounds milk and 260·1 pounds of fat. Ten cows are running in this test at the present time. Sixteen cows have finished lactation periods during the year; 8 mature cows, 6 four-year-old, 1 three-year-old and 1 two-year-old.

The cows are handled in every way as a dairy herd. Feed rations are made up as economically as possible and fed for milk production. Meal is given at the rate of 1 pound to 3 or 4 pounds of milk produced. Roots and ensilage from 40 to 60 pounds and hay from 8 to 12 pounds per day, in two feeds.

The grain mixture during the year was made up of:—

400 pounds bran at $2.56 per cwt.	$10 24
300 pounds cotton seed at $4.50 per cwt.	13 50
200 pounds ground oats at $2.56 per cwt.	5 12
100 pounds oil meal at $4.58 per cwt.	4 58
1,000 pounds costing	$33 44

Average cost per 100 pounds about $3.35.

Hay was charged at $18 per ton and roots and ensilage at $5 per ton. Salt is given in the meal ration, 1 pound of salt to 100 pounds of meal.

Pasture is very limited, making it necessary to feed succulent feeds in the barn during the summer months. The cows were grazed on the dyke during September which helped the fall feeding problem materially.

The herd of 16 completing their lactation period during the year averaged 271·3 days in milk, and produced 4,747·69 pounds of milk each, averaging 17·49 pounds of milk per day. The per cent of fat in milk averaged 4·09. The butter per cow averaged 228·9 pounds. The value of the butter was $123.74 and the skim-milk $14.63 per cow. The cost of feed per cow from calving to calving was $107.28, leaving a profit per cow of $31.09.

Heifer, Kentville May 2nd cost to one year of age $85.18, made up as follosw:—

Whole milk, 584 lb. at $2.50 per cwt.	$14 60
Skim-milk, 1,303 lb. at 50c. per cwt.	6 51
Meal, 1,367 lb. at $3.23 per cwt.	44 15
Roots, 4,768 lb. at $5 per ton.	11 91
Hay, 891 lb. at $18 per ton.	8 01
	$85 18

Kentville Symmetry cost to one year of age as follows,—

Whole milk, 430 lb. at $2.50 per cwt.	$10 75
Skim-milk, 1,452 lb. at 50c. per cwt.	7 26
Meal, 1,292 lb. at $3.23 per cwt.	41 73
Roots, 3,734 lb. at $5 per ton.	9 34
Hay, 712 lb. at $10 per ton.	6 40
	$75 48

Kentville Susan cost from one to two years of age as follows:—

Meal, 1,198 lb. at $3.23 per cwt.	$38 69
Hay, 1,421 lb. at $18 per ton.	12 78
Roots, 7,105 lb. at $5 per ton.	17 76
Pasturage, June 1 to Nov. 1, 5 months at $1.50.	7 50
	$76 73

We aim to breed the heifers at 20 months of age.

Steer Feeding.—Twenty steers were purchased October 25, 1919, dehorned, and divided into lots of ten each and placed on feed. For the first thirty days they were fed hay, waste potatoes, turnip tops, and a small allowance of grain consisting of mostly wheat bran. From November 25 to February 28 the meal mixture was made up of 300 pounds bran, 300 pounds cotton-seed, 200 pounds oats and 200 pounds screenings, and for the remainder of the period a mixture of 300 pounds bran, 300 pounds cotton-seed, 200 pounds oats, and 100 pounds oil meal. The average cost of meal per hundredweight throughout the period was $3.15.

Turnips were fed from November 25 until the supply was exhausted, and then ensilage was given for the remainder of the period. Average amount of roots and ensilage fed each steer per day was 35·83 pounds. The steers received 10 pounds of hay each per day and averaged 6·1 pounds meal per day throughout the period.

They were watered in the yard except for a short time, when water was before them all the time.

Number of steers fed.		20
Number of days in period.		150
Total weight of steers at start.		18,140 pounds
Average weight of steers at start.		907 "
Total weight of steers at finish.		22,572 "
Average weight of steers at finish.		1,128.6 "
Total gain in weight.		4,432 "
Average gain in weight per steer.		221.6 "
Total cost of steers at start at 9¾ cents.		$1,768 00
Total selling price of steers at 12½c.		2,821 50
Total gain in value.		1,053 50
Average cost per steer.		88 40
Average value per steer at sale		141 07
Average gain in value per steer.		52 67
Total amount of meal eaten, 18,320 lb. at $3.15 per cwt.	$ 578 57	
Total amount of hay eaten, 30,000 lb. at $18 per ton.	270 00	
Total amount of ensilage eaten, 46,000 lb. at $5 per ton	115 00	
Total amount of roots eaten, 40,000 lb. at $5 per ton.	100 00	
Total cost of feed for period.		1,063 57
Loss on 20 steers.		10 07
Average loss per steer.		50.35 cents

Horses.—One driving horse was purchased during the summer, making a total of 13 horses. During the winter one of the older and undesirable teams was disposed of, making a total of 11 horses now on hand.

Swine.—The five Yorkshire sows bred in December and January farrowed 45 pigs in April and May. Five of these were lost at farrowing time, 32 were sold for breeding, and 8 were disposed of for feeding. These sows were bred again during the summer, but intestinal troubles developed, apparently from the wheat screenings used, resulting in one sow losing her litter and another failing to develop any milk at farrowing time. The other two produced weak and inferior litters, of which several were lost from intestinal parasites. These parasites had found lodgment in the lungs, resulting in an unthrifty development and in some cases loss from pneumonia. The lungs from several of these young pigs were forwarded to the Health of Animals

Branch, Ottawa, to locate the trouble. Two of the old sows were disposed of and two produced litters of 10 and 12 during March. The pigs on hand on March 31, 1920, were 1 boar, 2 sows, and 22 small pigs.

POULTRY

Except the construction of three 6 by 8 colony houses for housing growing chickens, no additions have been made to the poultry housing equipment.

A Buckeye incubator, with a capacity of 2,440 eggs, was installed during the early spring of 1919. This incubator is fitted with fans for distributing the warm air through the egg chamber. These fans are run by electricity, and because of having only night electric service difficulty was experienced in arranging motor power for the fans. This was supplied by a water motor, but the results were not very satisfactory. Out of 1,936 eggs set, of which 91 per cent were fertile, only 27 per cent hatched. This was due to uneven water pressure and consequent variation, together with some vibration from the water motor. The hatch from 359 eggs put under hens was 80 per cent.

It was decided wise to confine the stock to Barred Plymouth Rock and White Wyandotte. After a careful selection on November 1, breeding pens were made up of 90 pullets and 28 hens of Barred Plymouth Rock and 68 pullets and 24 hens of White Wyandotte. In addition there were 40 late hatched pullets and 3 hens, making a total of 198 pullets and 55 hens. During the winter some of the pullets were disposed of, so that on March 31 there were 42 breeding hens, 121 breeding pullets, and 31 pullets undesirable for breeding.

The total egg yield from 183 pullets was 9,024 eggs for the five months commencing November 1, an average of 49·3 eggs per pullet for the whole flock.

In January, 45 pullets laid over 20 eggs each. In February, 75 pullets laid over 20 eggs each, and in March, 87 pullets laid over 20 eggs each. Pen 1 averaged 19·8 eggs in February and 25·3 eggs in March. Pen 2 averaged 19·5 eggs in February and 24·7 in March. Pen 3 averaged 18·3 eggs per pullet in February and 24·2 in March. The best pullet had 134 eggs to her credit on the 31st March and six had laid over 100 eggs.

As stated above, the whole pullet flock has averaged 49·3 eggs each for the five-month period from November 1. These at 60 cents a dozen represent a value from each pullet of $2.465.

Feeding.—The whole grain fed during the winter was cracked corn, wheat and oats. The dry mash was made up of bran, shorts and crushed oats in equal parts. Oyster shell, grit and beef scrap were before the hens all the time, and whole mangels were supplied daily for green feed in quantity that would be eaten up nicely in two hours.

The feed cost per month has been 33·4 cents per pullet. The average pullet production during the five months commencing November1 was 49·5 eggs per month, which were sold for $2.46, and the cost of feed was $1.67 for the same period, or a profit above cost of feed of 79 cents per pullet.

BEES

It has been possible to make considerable progress with bees during the season. Of the twelve colonies wintered, eleven came out in the spring fairly strong. In addition, ten colonies were purchased, and these, with the increase, gave a total of thirty-six colonies. All were wintered in cases outside, as is the usual practice.

One colony produced 316 pounds of honey. Twenty-one colonies yielded 701 pounds of apple blossom honey. In one colony 83 pounds were gathered in five days,

or an average of 16·3 pounds per day during the height of the fruit bloom. This same colony brought in 19 pounds of honey in one day as the greatest daily production. The average of the twenty-one colonies was 122·8 pounds for the season.

FIELD HUSBANDRY

Hay.—The field crops were exceptionally good during the year. The clover hay produced on the Station amounted to 61 tons 1,610 pounds; of this, 25 tons 550 pounds were gathered from 8 acres. The dyked areas yielded 58 tons 340 pounds. The total hay crop amounted to 135 tons.

Grain.—The grain yield amounted to 1,352 bushels.

Twelve acres of Banner oats yielded 62¾ bushels per acre and 4½ acres of Victory oats yielded 60 bushels per acre. Ten acres of Banner oats grown at Coldbrook yielded 574 bushels. This makes a total of 1,926 bushels threshed.

Corn.—Eight acres of Longfellow corn produced 18 tons 1,620 pounds per acre. Other areas not in good fertility for corn produced much smaller yields. The total corn harvested for ensilage amounted to 255 tons 1,590 pounds.

Mangels.—An area in mangels averaged 939 bushels per acre, and the plot mangels averaged 980 bushels per acre. The total yield was 3,213 bushels.

Turnips.—Because of club-root it is impossible to grow a good turnip crop. The yield on one area was only 460 bushels per acre because of this disease. A small area fairly free from the disease yielded 780 bushels per acre, and a field apparently free yielded 820 bushels per acre. A total of 3,640 bushels was harvested.

CEREALS

The cereal crops were grown in one-half acre areas. The crop yields were as follows:—

Victory oats	83.58 bushels.
Banner No. 49 oats	71.29 "
Manchurian barley	33.12 "
No. 80 C barely	39.04 "
Duckbill barley	36.66 "
Marquis wheat	24.83 "
Huron wheat	24.16 "
Red Fife wheat	26.68 "
Spring rye	27.50 "
Liberty hulless oats	33.93 "
Arthur pea	27.24 "
Golden Vine pea	23.38 "

FORAGE CROPS

Tests were made of root seeds from different sources on uniform land of fair fertility. The plots were one-thirty-sixth acre each. The mangels produced an even stand. The carrots were also good, but the turnips were almost entirely lost because of club-root, and no reliable records as to yields were possible.

There were 60 plots of mangels, which ranged in yield from 435 to 1,218 bushels per acre. Four varieties of sugar beets ranged from 475 to 622 bushels per acre. Thirty-two plots of carrots ranged from 234 to 712 bushels per acre. Sixty-five plots of turnips were grown, but, as already stated, a record of yields was not possible.

Turnips for Seed.—Turnips were planted for seed production as follows:—

10 acres Ditmars Swede seed produced	4,272 pounds.
8 acres Corning Green Top seed produced	2,600 "
1 acre Corning Green Top seed produced	504 "
10 acres Canadian Gem seed produced	1,130 "
Total	8,506 "

The Canadian Gem turnips were attacked so badly by root maggot in the stecklings stage that there were few turnips not showing injury from this insect. This injury resulted in rot developing in storage, and particularly after planting, and the stand was not one-quarter of what it should have been, thus accounting for the poor yield.

Clover for Seed.—The second-growth clover on 14 acres which had been cut for hay on July 5 to 8 was harvested during the first week in October. The weather was unfavourable for curing this crop, but it was eventually stored and threshed during the winter with the Provincial clover huller, yielding 1,838 pounds of seed as taken from the huller.

FERTILIZER AND LIMESTONE EXPERIMENTS

The orchard fertilizer experiments started in 1913 have been continued from year to year. The object is to gather information relative to the best fertilization for orchard development, and until these trees come into fruiting no definite data will be available. A record has been kept of the intercrop, and information as to the value of the intermediate crops is being secured.

The four-acre area devoted to fertilizers, applied at different rates per acre and of different combinations, has been continued under test, and at the end of another season, when the rotation is complete, some data of value should be secured.

The test with the raw ground limestone has been continued and the data given below have been secured.

Limestone Experiment.—The land on which this test was conducted was naturally a poor sandy area, and at the termination of the first rotation in 1917 it was decided to apply 15 tons of manure to the acre to the whole area. The fertilizer applied in 1914 and 1917 was very small, amounting to 140 pounds nitrate of soda, 300 pounds acid phosphate, and 101 pounds muriate of potash. Limestone at the rate of 2 tons per acre was applied in the spring of 1914 and 1917 and worked into the soil. It will be seen from the above that in the six years the limestone applied amounted to 4 tons, the fertilizer 1,082 pounds, and the manure 15 tons. The yield per acre was as follows:—

FERTILIZED IN 1914

Year	Crop	Limed, 1914		Not limed		Increase from lime	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1914	Potatoes	86	45	76	13	10	32
1915	Oats	38	14	31	24	6	24
1916	Hay	.....	1,494	.....	666	.....	828

MANURED AND FERTILIZED IN 1917

Year	Crop	Limed 1914 and 1917		Not limed		Increase from lime	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1917	Potatoes	329	18	302	25	26	53
1918	Wheat	30	14	23	48	6	26
1919	Hay	.....	4,926	.....	3,126	.....	1,800

NOT FERTILIZED

Year	Crop	Limed 1914		Not limed		Increase from lime	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1914	Potatoes	67	35	55	55	11	40
1915	Oats	32	27	30	15	2	12
1916	Hay	.....	1,120	.....	720	.....	400

MANURED AND NOT FERTILIZED, 1917

Year	Crop	Limed 1914 and 1917		Not limed		Increase from lime	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1917	Potatoes	313	25	251	50	61	35
1918	Wheat	29	50	19	30	10	20
1919	Hay	.....	4,090	.....	2,640	.....	1,450

HORTICULTURE

Orchards.—The orchard area has made excellent growth during the year and many of the young trees have fruited. The area planted in 1912 with trees 20 by 20 feet apart, or 108 trees per acre, has yielded barrels per acre as follows:—

Ben Davis	111.24	Gano	108.
Ribston	50.06	Stark	46.
Wagener	68.04	Wealthy	83.16
Hubbardston	58.64	Blenheim	2.80
Rome Beauty	27.32	Cox's Orange	49.24
Duchess	64.80	Yellow Transparent	64.04
Crimson Beauty	20.08	Ontario	62.64

In addition to the 47 acres of orchard at this Station 18 acres were secured in the purchase of the Mrs. John Tully property, making a total of 65 acres of orchard.

The cherries were a very light crop and there was considerable loss of foliage during the summer from the cherry leaf spot. The peaches have fruited a few specimens but indications are that very few varieties will be of value.

The plum crop was very light, a few bushels only being secured.

Orchard spraying experiments were continued at Berwick, Falmouth and Bridgetown and data of value secured.

Experimental work was continued with potatoes as usual and with various other vegetable crops.

The shrubs and trees on the lawns have made good growth, and these, together with the annual and perennial flowering plants, combine to make attractive farm surroundings.

BUILDINGS

Four brooder houses, 10 by 10 feet in size, were constructed for the rearing of young chicks, and these were equipped with Buckeye brooder stoves.

An enlarged apiary house 14 by 18 feet was also constructed.

ADDITIONAL FARM PURCHASED

In order to assist in the training of returned men, a property adjoining the Experimental Station was purchased from Mrs. John Tully. This included 101·5 acres in upland east of Canaan Road, 17 acres in woods west of Canaan Road and

11·4 acres of dyked land, making a total of 129·9 acres. This area was used by men in training during the season and they were given practical work in ploughing and preparing ground for grains and other crops and the management and harvesting of the same.

EXHIBITIONS

An exhibit of farm produce and live poultry was made at the following points: Halifax, N.S., on the 3rd to 5th of November; New Glasgow, N.S., 10th to 12th November; Truro, N.S., 25th to 27th November; Amherst, N.S., 15th to 19th December; and Kentville, N.S., December 29, 30, and 31.

AGRICULTURAL MEETINGS

Agricultural meetings were attended at different places during the year and addresses delivered on agricultural topics.

EXPERIMENTAL FARM, NAPPAN, N.S.

REPORT OF THE SUPERINTENDENT, W. W. BAIRD, B.S.A.

THE SEASON

The freeze-up for the winter came on November 17, 1918. The winter was characterized by a lack of severe weather, heavy storms and snowfalls. Only three days of zero weather were recorded throughout the months of January, February and March. these all occurred during the first-named month. The snowfall for the year aggregated 32·75 inches, as compared with 79 inches for the year 1918 and the average of 75·6 inches for the previous five years.

Backward weather during April, with fourteen days of rainfall, resulted in the frost coming out of the ground slowly. Only during the latter week did the fields and highways show signs of drying up.

Bright, fine weather, with a normal mean average temperature and occasional beneficial showers, prevailed throughout the greater part of May, but owing to the fact that but little fall ploughing had been done the previous autumn, seeding operations were hindered materially. Seeding operations were commenced at the Farm on May 17 and continued until June 28, when the last fields were sown to buckwheat.

June was an ideal spring month, characterized by a normal mean temperature, precipitation and an exceedingly high total hours of sunshine. The precipitation of 2·73 inches fell on eight days and was evenly distributed, which made conditions ideal for all classes of farm crops, especially hay and grain.

July was a favourable month for growing crops but unfavourable for haymaking. Temperature and sunshine were normal, and precipitation heavy.

The month of August was very unfavourable for rapid haymaking and early harvesting. Rainfall occurred on thirteen days, which, although not heavy at any time, was sufficient to seriously hamper farm work.

September was a normal month in respect to temperature but lacked in total hours of sunshine. Precipitation was higher than the average for the month.

October was, for the most part, an average one. The mean average daily temperature was 43·11 degrees as compared with 46·86 degrees for the previous year. Rain fell on ten days aggregating 2·50 inches but it was fairly evenly distributed and work in connection with the harvesting of all crops progressed favourably. The month closed with all grain crops harvested.

The first week in November was characterized by very heavy gales and a precipitation of 5·69 inches, made up of 5·09 inches of rain and 6 inches of snow. In spite of this, the root crops were successfully harvested and approximately one hundred acres of land were ploughed in preparation of the season of 1920.

December was an abnormal month. It was characterized by unusually severe weather, the coldest, with the exception of 1917, during the previous seven years. Cold settled weather prevailed throughout, with nine days of zero weather, the coldest of which occurred on the 18th when the mercury dropped to 18 degrees below zero. The precipitation aggregated 2·05 inches, made up of 1·2 inches of rain and 8½ inches of snow. At no time during the month was there snowfall sufficient for sleighing.

METEOROLOGICAL RECORDS

Month	Temperature			Precipitation			Sunshine	
	Highest	Lowest	Mean	Rainfall	Snowfall	Total	Days	Hours
				Inches	Inches	Inches		
January	52	−13	20·99	1·24	3·25	1·56	19	86·7
February	39	2	23·72	0·48	15·00	1·98	17	101·7
March	53	0	29·75	2·24		2·25	19	120·9
April	60	20	38·65	3·26		3·26	17	94·3
May	75	24	48·40	2·27		2·27	29	197·8
June	84	31	58·38	2·73		2·73	28	238·2
July	85	33	64·83	3·88		3·88	28	206·7
August	80	38	63·17	1·28		1·28	28	200·0
September	78	33	56·80	3·97		3·97	22	134·0
October	64	20	43·11	2·50		2·50	22	127·0
November	60	7	35·98	5·09	6·00	5·69	15	58·8
December	48	−18	17·44	1·20	8·50	2·05	20	98·3
Total				30·14	32·75	33·42		1,664·4

LIVE STOCK

Horses.—Eighteen horses are kept at the Station, including four pure-bred Clyde mares, two two-year-old mares, one two-year-old stallion, one one-year filly, one span of grade Clyde mares and one grade yearling colt. The remaining horses are just ordinary grades. The above horses are used to carry on the work at the Station, as well as for breeding and experimental feeding work, and are in good condition for this year's work.

Dairy Cattle.—The "grade-up" experiment, being conducted with dairy cows of average breeding, has now completed its seventh year's work. The object of this experiment is to prove that by the use of a pure-bred sire of the highest type which is backed by high milking qualities one can increase his profits many times, and that, after all, it pays to use nothing but the best if the most paying results are looked for. Up to date this has been proven as the majority of the individuals produced are superior to their dams, not only in production, but likewise in type and dairy conformation.

Beef Cattle.—Twenty-three steers of average beef type were fed during the winter. These steers were divided into four lots. Lot 1 consisted of eight steers which were tied. Their average weight at the beginning was 1,062 pounds and at the finish, their weight was 1,236·7 pounds. These were fed the following meal mixture: 200 pounds bran, 200 pounds oats, 100 pounds cotton seed, 50 pounds oil cake. Lot 2 consisted of five steers loose in box stall. Their average weight at the beginning was 1,061 pounds, and at the finish, their weight was 1,224 pounds. These received the same meal mixture as Lot 1.

Lot 3 consisted of five steers loose in box stall. Their average weight at the beginning was 893·4 pounds and their weight at the finish was 1,067 pounds. The meal mixture they received was as follows: 200 pounds bran, 100 pounds crushed oats, 100 pounds ground screenings. Lot 4 consisted of five steers loose in box stalls. Their weight at the beginning was 837·6 pounds and at the finish, their average weight was 1,001·6 pounds. They received the following meal ration: 100 pounds bran, 200 pounds screenings, 100 pounds cotton-seed, 50 pounds oil cake.

The costs per pound of the meal mixtures are as follows: Lots 1 and 2, 3·19 cents. Lot 3, 3·15 cents. Lot 4, 2·93 cents.

The following table is a summary of the four lots fed, giving the main points of interest, for comparison:—

		How Housed			
		Tied in barn		Loose in stall	
		Lot 1	Lot 2	Lot 3	Lot 4
		Roots and meal	Roots and meal	Roots and meal	Roots and meal
Number of steers		8	5	5	5
Average weight of steers at start	lb.	1,062	1,061	893·4	837·6
Daily rate of grain per steer	lb.	2·081	1·947	2·066	1·952
Cost of 1 pound gain	cts.	22·35	23·89	21·16	22·42
Cost of feed per steer per day	cts.	46·54	46·54	46·11	43·78
Profit per steer	$	20.60	19.08	14.96	13 69

The most striking point in the above test is that there is a greater profit to be realized in the feeding of steers over 1,000 pounds, because you have increased in value, in the heavier steer, a larger amount of meat, which costs you some two or three dollars less than that for which it is sold.

The spread in this case was $3.48, which is a fairly good spread between the buying and selling price. The profit per steer should be encouraging to the beef feeder inasmuch as fair profit may be realized out of beef even at the high prevailing price of mill feeds.

Sheep.—Two flocks of sheep are kept at the Farm. One is a grade flock, consisting of thirty-one breeding ewes of all ages. We are carrying on improvement work in breeding up more profitable ewes by the use of good pure-bred rams. Some excellent results have been obtained up to date. The pure-bred Shropshire flock consists of thirty-two breeding ewes of all ages, which are in good condition and giving most satisfactory results. The object of this flock is to aid in the improvement of the Shropshire breed by selling out good stock rams, to show the cost of production and profit to be realized out of a good pure-bred flock and to obtain information on the cost of maintenance.

Swine.—Two herds are kept, viz.: Yorkshire and Berkshire. Unfortunately, we have not had very good results from our pigs as many of the young stock have died with white scours. At the present time we have eight pure-bred Yorkshires, one Yorkshire boar, one Berkshire sow, one Berkshire boar and thirty young feeders.

POULTRY

The past year has been a very successful one at this Farm in the poultry work.

Three breeds were kept, namely, Barred Rocks, S. C. White Leghorns, and White Wyandottes. The number of each breed wintered during 1919-20 was as follows: S. C. White Leghorns—3 males, 40 hens and 56 pullets; Barred Rocks—4 males, 63 pullets; White Wyandottes—17 pullets.

Weather conditions in the Maritime Provinces are such that the successful hatching of early chicks is a very difficult task. The aggregate number of eggs set during April and May, 1919, was 2,758. 72·9 per cent proved fertile, and 39·77 per cent hatched, giving a total of 791 chicks. Owing to a severe attack of white diarrhoea, however, the mortality was very high. This condition is brought about very largely by sudden changes in temperature and the chicks getting a chill. Consequently, only 268 were brought to maturity. From the winter production of eggs more satisfactory results were obtained. The number of eggs laid and the cost per dozen is as follows: November, 86 eggs at $1.52 per dozen; December, 202 eggs at 60 cents; January, 456 eggs at 39 cents; February, 534 eggs at 26 cents, and March, 657 eggs at 22 cents. Taking into account the very severe winter, this may be considered a very good showing for 181 birds, most of which were late-hatched pullets.

Egg-laying Contest.—Egg-laying contests in the past have been a factor not only in stimulating a greater interest in poultry work, but have aided much in increasing production from a commercial standpoint. For these reasons it was decided to start a contest at Nappan with the object of helping the poultry breeders in the sections of the provinces of Nova Scotia and New Brunswick, which this Farm serves.

The contest was opened November 1, 1919, with twenty entries of ten birds each. Out of the twenty contestants, nine were from Nova Scotia, eight from New Brunswick, two from Ontario and one from Quebec.

In spite of the cold winter, and the fact that many of the birds entered were late hatched pullets, the results up to date are most encouraging. Approximately 9,000 eggs have been produced during the five winter months from 200 birds.

BEES

From an apiarist's standpoint, the past season has been only fair. A fairly mild winter, followed by a late cold spring, caused a heavy mortality. Seven colonies which survived the winter of 1918-19 were increased to fourteen during the season.

The total production from fourteen colonies was 599 pounds of extracted honey. The highest production from a single colony was 147 pounds and the average for all colonies was 85·5 pounds. A ready market was found for the honey at 30 cents per pound.

FIELD HUSBANDRY

The past season was considered only a fair one so far as general farm crops were concerned. The spring was cold and backward, retarding growth until well on to June. However, good growing weather was experienced through June, July, and part of August, but the conditions for the curing of hay were most unfavourable. Consequently, the quality was not nearly so good, on the average, as for 1918. There was, however, an increase of one-half ton per acre over the previous season. The total amount of hay cut at this Farm during the season was 325 tons 440 pounds. The upland hay ranged from 1 ton 1,400 pounds per acre, to 2 tons 108 pounds per acre, while the marsh lands ran from 1 ton 675 pounds to 1 ton 836 pounds per acre. The latter yields are good when it is taken into account that during the last three years these marsh lands have been heavily flooded.

All grains, excepting mixed grain, were below the average yield of 1918. The following are field returns. Banner oats, 39 bushels per acre; Ligowo oats, 46 bushels per acre; Charlottetown No. 80 barley, 23 bushels per acre; French Chevalier barley, 16 bushels per acre; Red Fife wheat, 16½ bushels per acre; Huron wheat, 15 bushels per acre; Silver Hull buckwheat, 13½ to 16¾ bushels per acre; mixed grain, 44 bushels per acre.

It was only a fair season for corn, the weather being too cold and wet during the early stage. The five acres produced 62 tons 1,960 pounds, or 12 tons 1,192 pounds per acre.

Roots were not a very successful crop. The season was by no means favourable for big yields. This held true throughout the district with but few exceptions. The yield at this Farm was away below the average. It was only 508¼ bushels per acre on an eight-acre field, which was well tilled and had received plenty of fertilizer.

FIELD EXPERIMENT

The experiment we conducted to show the value of ground limestone, when used on our heavy clay soils, gave results that are very convincing as to the part ground limestone will play in increasing production, especially in the case of clover hay.

The average results over a period of three years showed a profit over the cost of the limestone, when used in different quantities per acre, as follows: One ton per acre, $0.38; two tons, $4.56; three tons, $2.71; four tons, $2.86; five tons, $1.69; check plot, zero. This shows that on the average, two tons per acre is about the most profitable amount to use. The total values of three-year crops were $60.29, $69.03, $73.08, $72.21, $81.56, and $55.87, respectively.

CEREALS

Wheat.—Ten varieties of wheat were tested in duplicate test plots of one-sixtieth of an acre each. The highest yield was Huron (Ottawa), 2,640 pounds, or 44 bushels per acre. The lowest was No. 86 D-2, 1,710 pounds, or 28 bushels 30 pounds per acre.

Barley.—Eight varieties of barley were tested in like manner to those of wheat. The highest yield was six-rowed Stella-Ottawa 58, 1,680 pounds, or 35 bushels per acre. The lowest was Albert, 600 pounds, or 12½ bushels per acre. In the two-rowed varieties, Charlottetown No. 80 gave 2,715 pounds, or 56 bushels 27 pounds per acre. The lowest was Duckbill-Ottawa 57, 1,590 pounds, or 33 bushels 6 pounds per acre.

Oats.—Ten varieties were sown in test plots. Highest yield was Ligowo, 3,090 pounds, or 90 bushels 30 pounds per acre. The lowest was Lincoln, 2,535 pounds, or 74 bushels 19 pounds per acre.

Buckwheat.—Only five varieties of buckwheat were sown and gave the following yields: Grey, 1,410 pounds per acre; Japanese, 1,455 pounds; Rye, 1,380 pounds; Silver Hull, 1,515 pounds and Tartarian, 1,185 pounds per acre.

Field crop of seed grain.—One acre of Red Fife gave 16 bushels 30 pounds per acre of fairly good grain. One acre of Huron yielded 15 tons of good seed. This grain will be used for seed purposes.

FORAGE PLANTS

Corn.—Ten varieties of fodder corn were tested in duplicate plots of one one-hundredth of an acre each. The highest yield was obtained from Longfellow, 14 tons 500 pounds per acre. The lowest was from Yellow Flint, 7 tons 250 pounds per acre.

Sugar Beets.—Four varieties only were tested. The highest yield was obtained from Chatham-grown, 10 tons 250 pounds, or 405 bushels per acre. The lowest was from Waterloo, 9 tons, or 360 bushels per acre.

Turnips.—Fifty varieties were tested in plots of one one-hundredth of an acre each and the highest yield was obtained from Perfection Purple Top, while the lowest was from Drummonds, 6 tons 400 pounds, or 248 bushels per acre.

A commercial variety test was also made of some fifty leading varieties as to their purity and trueness to type. Samples of the same varieties were obtained from different wholesale seedsmen and planted in duplicate plots. The results obtained were most striking, inasmuch as it was found that a great many of the varieties, sold under different names, were practically identical; further, that very few of the present varieties were pure or true to type. For example, Elephant and Monarch are sold as two distinct varieties, yet, so far as the eye could tell, they were identically the same. Other varieties would run as low as 50 per cent true to type.

Turnip Seed Production.—Five and one-half acres were planted to Monarch stecklings on May 15. Seed was gathered and threshed on September 18, threshed on canvas September 23 and later it was cleaned. The average yield per acre was 300 pounds. The yield is below the previous season, which ranged from 500 to 1,200 pounds per acre.

HORTICULTURE

Apples.—The apple crop was above the average for most varieties. Arabka Winter was one of the heaviest producers at the Farm. Northern Spy, Charlamoff, Pewaukee, Baxter, Grimes Golden, Wealthy, Astrachan, and Duchess yielded in order of standing. The non-productive varieties were Rome Beauty, McIntosh, and Bethel. The highest percentage was No. 2.

Strawberries.—Fifty-two varieties were on test, eight of which were winter-killed. The yields were not more than average, principally due to too heavy soil. The highest yield, 5,808 quarts per acre, was obtained from Success. The lowest was from Bederwood with only 1,584 quarts per acre. The average was approximately 3,872 quarts per acre.

Raspberries.—Eight varieties of raspberries, which were on test, showed a marked falling off in yield as compared with previous season's yield. King yielded 4,840 quarts, while Hubert produced only 1,331 quarts per acre. The average yield for all varieties was 2,718·7 quarts per acre.

Gooseberries.—Seventeen varieties were planted in 1916. The majority were English varieties which have since suffered severely with Downy Mildew. Consequently, the yields were not sufficient to warrant them being recorded.

Currants.—Most satisfactory production was recorded from the black, red and white currants, with the exception of Clipper, a black variety. The highest yields from the blacks, 14,189·6 quarts per acre, was obtained from Victoria. The lowest yielder was Clipper which produced no fruit. Eclipse was next with only 765·7 quarts per acre. The average for all varieties was 5,903·6 quarts.

Of nine varieties of reds, Red Dutch gave the best returns, 18,278·9 quarts, while Pomona only yielded 4,423·9 quarts per acre. The average for all varieties was 11,908·0 quarts per acre.

Only three varieties of whites were grown. The yields per acre from these were as follows: Large White, 10,209·0 quarts; White Cherry, 6,694·6 quarts; White Grape, 7,078 quarts.

Potatoes.—Thirty-one varieties of potatoes were tested in duplicate plots of one one-hundredth of an acre each. The season, on the whole, was most unfavourable for large returns to be realized, especially during the latter part of July and August, when the weather was fairly wet. Consequently, the conditions were ideal for blight, and the yields certainly show the effect of it. The highest producer was British Queen, an English variety, 433 bushels 20 pounds per acre. The lowest was Dalmeny Beauty, 136 bushels 40 pounds per acre. The average for all varieties was 342 bushels 24 pounds per acre.

Elite Stock.—The improvement of the strains of Irish Cobbler, Wee MacGregor, Green Mountain, Empire State, Carman No. 1, and Rawling's Kidney was carried on, but the result during the past season was not very encouraging, for on inspection, it was found that a number of the varieties were infected with Leaf Roll and Mosaic.

Vegetable Seed Production.—A start was made in producing vegetable seed but only fair results were obtained. The season was unfavourable, especially at harvest time, making it almost impossible to harvest the seed properly. However, four pounds of good parsnip seed were produced. This work will be continued next season.

Shrubs.—All ornamental shrubs came through the winter in fairly good condition and made a very satisfactory display during the summer.

Annual Flowers.—Only fair results were obtained from bedded plants, most of which were stunted in the hot beds before setting into the open. Sweet peas and nasturtiums did exceptionally well.

FARM IMPROVEMENTS

The roof of the bull and calf barn was shingled and ventilators were required.

A new farm cottage was erected on the opposite side of the main road from the Superintendent's house. The size of said cottage is 26 feet by 33 feet with four rooms and bath upstairs, and a living room, dining room, kitchen and pantry downstairs. The foundation is of concrete 7 feet high and 12 inches thick. The floor of the cellar is also concrete.

An addition of 30 feet by 33 feet was built on to the old house at the creamery and the whole made into a double house. On the south side there are three bed-rooms and a bath upstairs, and a living room, hall, dining room and kitchen downstairs. On the north it is the same except that upstairs there is one more small bed-room. Both sides were wired for electric light on separate meters. When the water system is installed in these houses, they will be two very comfortable dwellings.

Ten new colony houses were built in October for the contest work and one for the main plant. These houses were 10 feet by 12 feet, each of which was divided equally by wire mesh partitions. Each pen was fitted out with roosts, dropping boards, trap nests, water bowls, grit, shell, charcoal, beef scrap and dry mash hoppers.

The necessary repairs were made to all farm buildings.

Fences.—All fences were put in as good repair as possible for the year. Approximately 2,000 feet of woven fence, style No. 950, 9-line wire, 50 inches high, uprights 22 inches apart, was erected on the north side of the Farm.

Farm Roads.—The split log drag was used on all the roads several times during the season in order to keep them in good repair and prevent the growth of weeds. Some time was also devoted to the maintenance of the public highway between the Experimental Farm and Nappan and Maccan stations.

EXCURSIONS AND VISITORS

The two largest gatherings held at the Farm during the season were the Cumberland County Farmers' Association on July 16, with a small attendance owing to unfavourable weather conditions, and the Knights of Pythias on August 20, with an attendance of approximately 2,500 people. A number of small parties and farmers' clubs visited the Farm at various times during the season. Everything possible was done to make the time interesting and of value to the visitors.

MEETINGS AND EXHIBITIONS

Throughout the year the Superintendent and the Assistant attended as many agricultural meetings and exhibitions held within the province as possible, giving assistance wherever their services were requested. Following is a list of meetings addressed and exhibitions attended: Dorchester, June 12; Amherst Head, October 9; Amherst Ploughing Match, October 14; Dorchester, October 15; Amherst Head, organizing a farmers' club, October 29; Halifax Poultry Show, November 2; Truro Poultry Show, November 26; Oxford County Show, September 25 and 26; Maritime Winter Fair, December 16 to 18; East Amherst, December 26; Nova Scotia Farmers' Association Meeting at Truro, January 7 to 9; Fruit Growers' Meeting at Kentville, January 27; Dominion Live Stock Breeders' Meeting at Toronto, February 2 to 5; Experimental Farm, Ottawa, February 8.

The Farm exhibit was put up at Oxford on September 25 and 26, and at Shubenacadie on October 1 and 2.

EXPERIMENTAL STATION, FREDERICTON, N.B.

REPORT OF THE SUPERINTENDENT, W. W. HUBBARD

THE SEASON

The autumn months of 1918 were fine and mild enabling the closing up of farm operations in well advanced condition for the spring of 1919. Ploughing was possible till November 23, and live stock remained on pasture during the day till that date. Snow came early in December and made goods roads till the middle of the month. The ground was then bare till the 25th, after which there was a nice even blanket of snow until the 20th March. There was very little winter-killing; the ground dried out early and ploughing began on April 23. Seed turnips were planted on the 28th and wheat seeded on the 30th. Grasses and clovers and fall grain came through the winter and spring with a full stand. Farm work generally was a week ahead of the average. Fall rye 30 inches high began to head out on the 1st of June. There was a frost at this date which cut down anything susceptible. June was dry with cold nights throughout, and July did not bring the usual heat. The weather was dry but this was favourable to soil conditions on the Station and all crops except corn did well. August was moist and cloudy without much precipitation, grain filled well but it was poor weather for harvesting. September brought moist cloudy days with very heavy rain on the 13th, conditions which interfered seriously with harvesting. Considerable grain sprouted in the stook and there was also caused a wide-spread infestation of Late Blight on potatoes. Slight frosts on the 16th and 28th of September did not do any damage on the Station. Frosts on the 2nd and 9th October, however, cut down garden crops and potatoes and night frosts were frequent during the rest of the month. November brought hard freezing on the 3rd. From the 13th a warm spell followed until the 19th, when winter set in, but with little snow till February. From then till the end of March was one of the roughest periods in the meteorological history of the province.

METEOROLOGICAL RECORDS

Month	Temperatures F.			Precipitation			Sunshine
	Mean	Highest	Lowest	Rainfall	Snowfall	Total	
1919	°	°	°	Inches	Inches	Inches	Hours
April	39·7	64	18	2·01	2	2·21	126
May	54	77	28	3·70	.....	3·70	213·20
June	64·2	90	52	2·24	.....	2·24	205
July	67	92	46	3·29	.....	3·29	201·40
August	64	82	39	2·07	.....	2·07	163·35
September	56·5	76	30	5·21	.....	5·21	138·95
October	43·5	62	19	2·85	·50	2·90	121·80
November	33·5	55	2	2·31	6	2·91	81·75
December	11·8	44	25·5	1·04	13	2·34	121·55
1920							
January	4·1	35	−25	Nil	12·50	1·25	110·15
February	16	38	−25	1·73	52	6·93	97·55
March	27	63·5	−19	1·68	11	3·58	152·70
				28·13	97·00	38·63	1,733·40

LIVE STOCK

Horses.—Fourteen draught horses and two driving and general purpose horses were kept to carry on the work during the year. Of these, eleven worked throughout the year, and five worked from April till November. There were also three three-year-old colts, three two-year-olds, one yearling and two colts under one year. Of these, seven were pure-bred Clydesdale mares and fillies, nine were high-grade Clydes, five were high-grade Percheron, two were draught geldings of undetermined breeding, and two were partly standard bred, Morgan and thoroughbred. A two-year-old Clydesdale stallion was received in November from the Central Experimental Farm. Two grade Percherons, on cheap winter feeding, each cost $13.48 for food during January, February and March. One weighed 1,430 pounds on January 1 and 1,425 pounds on April 1, while the other weighed 1,435 pounds on January 1 and 1,380 pounds on April 1.

Dairy Cattle.—Three pure-bred dairy herds are kept, viz., dairy Shorthorns, Ayrshires, and Holsteins. The largest producer for the season was an eight-year-old dairy Shorthorn. Her milk yield for 395 days was 14,682 pounds with a butter yield of 619 pounds. The best Ayrshire was a two-year-old that, in an unfinished period of 179 days gave 7,637·5 pounds of milk and 370·2 pounds of butter. The best Holstein was a five-year-old which in 376 days gave 9,800 pounds milk and 400 pounds of butter.

The grading up experiment is now fully started as three first cross herds, viz., Holsteins, dairy Shorthorns and Ayrshires are in the stable. These heifers are out of cows of no particular breeding that were cheaply picked up in the country nearby. Most of the Holstein grades are well on in the second lactation period. The dairy Shorthorns have completed their first period, while the Ayrshires have not all as yet been bred. While some of the common cows above mentioned proved very good producers, most of both the Holstein and Shorthorn grade heifers excelled their dams in their first period.

Eight of the original cows from which Holstein grade heifers were bred, gave an average milk yield for the season, of 4,596 pounds of milk and 218 pounds of butter. 359 pounds of butter. Her mother gave 5,367 pounds of milk with 257 pounds of milk and 229 pounds of butter.

Eight of the original cows from which Shorthorn grade heifers were raised, gave an average season's milk yield of 5,422 pounds with 276 pounds of butter, while their eight Shorthorn grade daughters as two-year-olds averaged 5,159 pounds of milk, with 240 pounds of butter.

The best individual Holstein grade in 373 days gave 8,833 pounds of milk with 359 pounds of butter. Her mother gave 5,367 pounds of milk with 257 pounds of butter in 272 days.

The best individual Shorthorn grade in 384 days gave 7,545 pounds of milk with 336 pounds of butter. Her mother gave 6,428 pounds of milk with 265 pounds of butter in 254 days.

The records kept on the cost of rearing dairy Shorthorn grade heifers have shown that the cost of their feed to one year of age was $36.21, to two years of age, $82.29, and to the time of calving from $104.79 in the case of a heifer 2 years and 7 months old, to $152.22 for a heifer 3 years 4½ months old. The stable ration fed these heifers while carrying their first calf cost 27½ cents per day. Their weights recorded a few weeks before calving averaged 1,037 pounds.

Beef Cattle.—No steers were bought in for feeding. Three second cross Shorthorn grade steers were raised. One of them took first place at Amherst Winter Fair in his class, and championship for the best beef animal sired by a Shorthorn bull. The other two weighing respectively 895 and 850 pounds at 13½ months old, were sold at auction for beef at $96 each. The 895-pound steer dressed 497 pounds of beef, and the 850-pound steer dressed 493 pounds of beef. The feed cost of these steers was approximately $61 each. A pure-bred Shorthorn heifer that would not breed, was sold for beef at 3 years and 9 months old, by auction for $191. She weighed 1,450 pounds and dressed 963 pounds. Her beef sold from 50 cents per pound down, according to the cut, for the Easter market.

Swine.—Five pure-bred Yorkshire sows and two grades have given good litters both spring and fall. The young pigs from the pure-bred sows have been sold for breeding, and those from the grade sows were sold for feeding. Sows have been running on pasture during the summer and wintered in cabins with plenty of yard room for exercise. Experience with feeding and rearing fall litters has not been satisfactory though yard exercise in fine weather has been constantly given them. Breeding sows were wintered largely on mangels.

Sheep.—The flocks of Shropshires and Cheviots have done well except that, unfortunately, the Shropshire ram proved useless, and no lamb crop was obtained from ewes of this breed. Cheviot rams were sold to New Brunswick farmers. A prize winning Shropshire ram lamb was bought from Prince Edward Island and an excellent lamb crop has started for the season of 1920. A large percentage of ewes are throwing twins and two lots of triplets have come.

POULTRY

The flock for the winter of 1918-19 consisted of 88 White Leghorns, 115 Rhode Island Reds, 24 Barred Rocks and 45 White Wyandottes, with 12 male birds.

The egg production for the year averaged 101 eggs per hen, and the average price per dozen for eating eggs was 52 cents. The average return per hen on a purely eating-egg basis was therefore approximately $4.37, and the cost of feed averaged $3.60, leaving a profit of 77 cents per bird, or $217.91 for the flock. The extremes between hens ranged from a profit of $4.98 for a bird laying 195 eggs, to a loss of $1.94 for one laying only 48 eggs. A pen of 23 April hatched White Wyandottes cost for food $85.27, and the eggs they laid were worth $141.21, leaving a profit above cost of food of $55.94, an average profit per bird of $2.43.

A pen of fifty-six April-hatched Rhode Island Red pullets made a profit of $74.06 above cost of feed ($1.32 per bird) for the six months from November to April, inclusive, while a pen of May-hatched pullets (56 birds) of the same breed for the same period, made only $13.63 profit or a little less than 25 cents per bird.

Four hundred and fifty chickens were raised and a number sold for breeding purposes. Hatching eggs from the best pens were also distributed in considerable numbers.

BEES

Ten colonies of bees were wintered, two in the honey house and eight in quadruple winter cases. One colony in winter case died. The remaining nine colonies made 698 pounds of extracted honey of a total value of $199.64. The greatest yield from one colony was 160 pounds. The average return per colony was $22.18. Colonies were increased to eleven. Honey was gathered principally from dandelion, fruit blossoms, raspberry, clover and goldenrod. The date of the last flight of bees in the fall was October 23 and the first flight in the spring, March 23. The time employed in the care of the apiary averaged approximately five hours per week from May until September.

FIELD HUSBANDRY

Hay, oats, turnips, silage corn, potatoes, fall rye, wheat and mangels were the principal field crops grown, in the order of acreage mentioned. Approximately forty-five and one-half acres in hay yielded 96½ tons. Twenty-one and three-quarter acres of oats yielded 65½ bushels of oats per acre. Four acres of oats on fertilizer test plots averaged 48½ bushels per acre. Fifteen and four-fifth acres of turnips yielded 733 bushels per acre. Ten acres of silage corn planted on the 3rd, 4th and 5th of June yielded at the rate 17·2 tons per acre as hauled to the silo. Eight and two-third acres of potatoes gave 297 bushels per acre. The cost of growing a single acre set apart for the purpose, including everything except rent of land and depreciation of machinery, was $100.88. No fertilizer except 18 tons of stable manure on a clover sod was used. The cost of manure and applying it was charged at $19.92. Seventeen bushels of seed cost $1.50 per bushel. The value of the potatoes when shipped to Ottawa in the spring at $7 per barrel was $549.76, leaving a profit over all costs of $427.48 per acre. (Had commercial fertilizer been used exclusively instead of stable manure the profit would probably have been at least $70 less.) Four acres of fall rye yielded 32¼ bushels per acre. Three acres of White Fife spring wheat gave 27 bushels per acre and one acre of Dawsons Golden Chaff fall wheat, 33⅓ bushels. An acre and two-fifths of Yellow Intermediate mangels yielded at the rate of 1,205 bushels per acre. An acre of peas and oats gave 7 tons 1,275 pounds of green fodder as hauled to silo, and 27 tons 1,595 pounds of clover, grasses, etc., were gathered up around the headlands, orchards and second growth clover, and ensiled.

FERTILIZER EXPERIMENTS

The eighty-eight plots on which fertilizers at different rates and varying composition were applied in 1918 for a potato crop, were this year in oats, and an average yield of 48½ bushels per acre was obtained with variations from 57 bushels per acre to 25·2 bushels per acre. This experiment will be concluded in 1920, but should be repeated for several rotation cycles on the identical plots, as the residual results of a previous and entirely different test on the plots are quite evidently causing results which make the present experiment not very readily intelligible.

CEREALS

The tests of varieties of wheat, oats, barley and peas were continued. Seven varieties of wheat were grown. White Russian, with 25 bushels and 50 pounds per

acre, gave the best yield. There was considerable glume spot on the crop which interfered with the filling of the grain. Of six varieties of oats, Banner led with 65 bushels and 10 pounds per acre, Victory came next with 62 bushels and 22 pounds, followed by Ligowo with 55 bushels and 30 pounds. Banner ripened in 91 days, Victory in 94 days, and Ligowo in 96 days. Of five varieties of barley, O.A.C. 21 was best with 36 bushels and 37 pounds ripening in 85 days. Peas were very poor though one plot of Arthur peas gave 35 bushels per acre.

FORAGE CROPS

The field forage crops have been reported on under Field Husbandry. Turnip seed grown on the Experimental Farms was tested in comparison with commercial seed as offered by the trade. Swede Purple Top seed from the Central Experimental Farm at Ottawa gave the best crop, with 1,168¾ bushels per acre, and the average yield from the six samples of seed grown at the various Eastern Experimental Farms was 911 bushels per acre. The average yield from 59 samples supplied by seedsmen was 847 bushels per acre which demonstrates that Canadian grown seed is at least as vigorous as any that can be obtained by the seed trade.

Turnip stecklings grown in 1918 were stored in pits and cellar by different methods. One pit had upright ventilation every eight feet only, one had bottom ventilation connecting to uprights and one had side as well as bottom ventilation with uprights. None of the pits kept well, and were emptied in March for feeding. The pit with the most ventilation was best preserved. In the cellar the stecklings were stored in barrels, crates, deep narrow bins, wide shallow bins and shelves. In all but the deep bins stecklings kept well till the end of March but during April crown rot took a large percentage except those in the barrels and crates. Stecklings spread 15 inches deep in another large cellar kept almost perfectly. On one field of 3·34 acres there was only about a 50 per cent stand due to crown rot and the yield of seed was 878 pounds. A field of 1·59 acres planted from the cellar where the roots kept well, gave a seed yield of 1,256 pounds. Tests were made in the comparing of stecklings of different sizes, planted at different dates, at different distances and different depths, and the largest yield was from turnips above 4 inches in diameter planted 12 inches apart in rows 42 inches apart.

HORTICULTURE

Large Fruits.—The apple orchard came through the winter in good condition and several varieties bore their first fruit. Included in these were a number of promising new varieties in the variety orchard. Two sprays were applied during the season. Many trees in the plum, pear and cherry orchard are in poor condition. Two varieties of cherries, the English Morello and Orel bore a good crop. One variety of plums, Moores Arctic, bore fruit.

Small and Bush Fruits.—In the spring of 1919 a new strawberry plantation was set out to replace the one destroyed by fire. The black currants bore a good crop, and different varieties showed a wide range in yielding capacity. The highest yield was 13,794 boxes per acre from Kerry. The lowest yield was 2,178 boxes per acre. The red currants were badly attacked by Anthracnose and some varieties were quite defoliated early in the season. The highest yield was 7,865 boxes per acre from Perfection. The lowest yield was 242 boxes per acre. Gooseberries have not done well. Growth has been slow and yields poor. Raspberries have done fairly well. The highest yield was 5,445 boxes per acre from Newman's Seedling No. 23. The lowest yield was 495 boxes. The vineyard continued to make satisfactory growth and several varieties ripened fruit. All varieties, except two, bore fruit. The highest yield was five pounds of ripe fruit from a vine.

Vegetables.—Variety tests of vegetables were continued again in 1919 and a large number of varieties were grown under comparative conditions.

Grounds.—A large assortment of annual flowers were grown. These in conjunction with the perennial borders and shrubs attracted much favourable comment. The large campus fronting the river was levelled and seeded to Kentucky blue grass for lawn.

FARM IMPROVEMENT

A much needed bull barn was built during the year, providing large box-stalls for four bulls, with doorways to the south so that the doors may remain open most of the time allowing the bulls continuous yard exercise. The north gable of the main barn was double boarded and battened to prevent driving storms from beating through. Two brooder houses were also built.

CLEARING LAND

Five acres of new land was stumped, burned and ploughed during the summer. A great many boulders were broken up and removed from various fields, and all stone coming to the surface during ploughing and cultivation in all fields were cleaned up.

EXHIBITIONS

Exhibits were made at the Provincial Exhibition, St. Stephen, and the Interprovincial Exhibitions at Fredericton and Chatham, where literature was distributed, applications for seed samples, etc., received and a continuous discussion conducted with visitors on the work of the Experimental Farm System and agriculture generally. A live stock exhibit at the Maritime Winter Fair, with 18 animals, drew seventeen awards.

MEETINGS ATTENDED

The Superintendent and assistant to the Superintendent addressed various meetings throughout the province, and attended the sessions of the Farmers and Dairymen's Association, and New Brunswick Fruit-growers at Fredericton. The Superintendent also attended meetings of the Maritime Stock Breeders' Association, the Nova Scotia Farmers' Association and the New Brunswick Potato Growers, and the assistant attended the Maine State Pomological Society's annual meeting at Bangor, Maine.

EXCURSIONS

The New Brunswick Fruit Growers' Association had a field day on August 28 and visited the Experimental Station among other orchards. Lunch was provided at the Station for one hundred and fifty visiting fruit-growers. The New Brunswick Farmers' and Dairymen's Association visited the Station on March 18 and dinner was given to two hundred and fifty visitors. They were given addresses by the Superintendents of the Kentville and Fredericton Stations, the assistant Superintendent of the Fredericton Station, and by Mr. Geo. E. Sanders, of the Dominion Entomological Branch. Live stock demonstrations and discussions were also conducted.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIERE, QUE.

REPORT OF THE SUPERINTENDENT, JOSEPH BEGIN

CHARACTER OF SEASON

The winter of 1918-19 was mild with abundant snow, which protected the soil from early spring frost. The snow disappeared about two weeks later than usual. April and the first part of May were cold and rainy. The first work on the land was done on May 8, and the first sowing the next day. Germination was slow, the first shoots appearing above the ground about May 14, at which time seeding was becoming general in this district. There was a period of drought from May 25 to July 10, less than two inches of rain falling during that time; but after the latter date rainfall was abundant. This, however, was too late for the hay, which gave a crop below the average. The grain harvest in the district suffered from late season and slow early growth owing to drought. The yield was, therefore, reduced and the crop was only fair. Roots and potatoes gave a good crop on the whole. Apples were fair, but plums, usually abundant in this district, yielded almost nothing. Small fruits yielded very poorly, both in quantity and quality, a frost on the 30th of May having done considerable injury to the buds. The winter of 1919-20 has been remarkable for light snowfall and intense cold during its early months. The soil froze deeply and water supplies were frozen up to a great depth by the end of December so that the shortage of water was more severe than it has been for many years.

LIVE STOCK

Horses.—There are at present on the Station twenty horses kept for the purpose of doing farm work and for carrying on breeding experiments. Of the above number eleven are registered Percherons, seven of them being mares varying in weight from 1,500 to 1,750 pounds, a three-year-old stallion, two youngsters of two and three years of age respectively, and a young spring colt. No feeding experiments were carried on with these during the last year, the object in view being to keep the horses in good condition for work, and to maintain the young stock in good growing condition with the least possible expenditure for purchased feeds.

Cattle.—The whole herd at present comprises 66 head of all breeds and ages divided as follows: 38 pure-bred registered Ayrshire and 28 common grades and Ayrshire grades. The Ayrshire herd is headed by a very good bull used with the pure-bred Ayrshire herd and with the Ayrshire grades; 17 milch cows from two to ten years of age; eleven young bulls from one to two years of age and nine spring calves. The cross-bred herd is made up of five milch cows, seven young grade Ayrshire heifers, nine bulls of the first Ayrshire cross and seven grade spring calves.

Fourteen Ayrshire completed their lactation period during the year. These gave a total of 81,214 pounds of milk during a period averaging 339 days per cow. The average yield of milk was 5,801 pounds per cow, or a daily average of 17.1 pounds. The average per cent of butter fat was 4.0143.

Twelve Ayrshire crosses also completed their lactation period during the year. They produced a total of 58,873 pounds of milk during an average lactation period of 315 days, giving an average yield per day of 15.5 pounds. The percentage of butter fat was slightly less than that given by the pure-bred herd, viz., 4.20. A number of young stock were sold during the year, some to local butchers, others to farmers for breeding purposes.

Swine.—At the close of the year the herd of swine consisted of a good Yorkshire boar, four sows from one to three years of age, five young sows and three young boars less than a year old. No feeding experiments were carried on during the year. The object in view was the production of pork as economically as possible using the feeds produced on the Station with the smallest possible amount of purchased concentrates. Among the farm feeds those produced commonly on farms in Eastern Quebec were used, such as clover, forage beets and sugar beets. These were used especially in connection with winter feeding of sows, young growing pigs, autumn pigs after weaning and also for young spring pigs, which were being raised on pasture. Some valuable information was obtained in this work. Notes were also taken on the advantages of portable cabins for the wintering of sows and boars.

Sheep.—A flock of pure-bred Shropshires and a flock of Shropshire crosses are being formed. The total sheep on hand at the end of the year was 66. 22 lambs were sold during the year and 307 pounds of wool.

POULTRY

The two utility breeds, White Wyandotte and Plymouth Rock, are kept at the Station. The flock is only a small one but wider experimental work is being planned for the coming year.

BEES

Both the native black bees and the hybrid Italians were kept. Eighteen colonies were wintered in the cellar and 8 in boxes out of doors, each box containing 4 hives. The bees wintered in the cellar came through satisfactorily only a single colony being lost; those wintered outside all wintered well. The spring was not favourable for early work with the bees. The production of honey was delayed by cold weather, and consequently was very short. The average yield per hive was 62 pounds as compared with 95 pounds the previous year.

FIELD HUSBANDRY

Rotations.—Four rotations of three, four, and five years are carried on regularly. The four-year rotation is carried on in duplicate on drained and undrained land. The three-year rotation is certainly the best adapted to high production of crops suitable for a dairy farm and for the raising of young cattle. This rotation requires more work but it produces more abundantly. Consequently, it is well suited to small farms having a certain area of natural pasture. The four-year rotation permits of keeping up the fertility of the soil, lessens labour on account of having two consecutive crops of hay and thus is well adapted to the system of farming pursued in eastern Quebec. On farms not having natural pasture, this rotation provides for a large area of hoed crops, an area under grain, a hay crop and pasture. The five-year rotation is planned for farmers wishing to grow more grain. It differs from the two former ones as it commences with a grain crop seeded down to clover to be ploughed down along with barnyard manure the next spring; this is followed by a hoed crop, grain the third year, clover hay or pasture the fourth year, and millet or pasture the fifth year. This rotation allows for the improvement of larger areas with less manure since the clover ploughed down adds to the fertility. The yields from all the rotations were good with the exception perhaps of hay, which was a little below the average of the three former years.

CEREALS

The average yield of all the cereals except peas, was slightly lower than the average of the three preceding years. The only apparent reason for this lighter yield was the late date of seeding. The average yields were as follows:—

Wheat—	
Huron	38 bu. 20 lb.
Marquis	35 " 15 "
Ruby	32 " 25 "
Oats—	
Banner	64 " 10 "
Daubeney	58 " 22 "
Ligowo	56 " —
Barley—	
Manchurian	36 " 20 "
Albert	31 " 10 "
Success	24 " 12 "
Peas—	
Arthur	34 " 40 "

HORTICULTURE

For lack of suitable land, a large portion of the experimental work in horticulture was not carried on last season. With potatoes, the chief experimental work was the testing of different sprays to prevent disease. A large quantity of cabbage, beet, carrot and lettuce and flower seed was gathered in good condition. This was intended for a small local distribution.

The trees winter-killed in 1917-18 were replaced in the spring. These established themselves perfectly and made good growth, ripening their wood well before winter. The yield of plums was the lightest in many years, the European varieties did not produce at all. The Lombardy poplars planted as a protection around the orchard made an average growth of 5 feet 7 inches during the year.

FARM IMPROVEMENTS

Considerable work was done in removing stone from the cultivated fields, in draining certain areas, and in the general improvement of those portions of the farm intended for experimental work with cereals and forage plants. The surface drains were also greatly improved on the level part of the Farm. A main 6-inch drain was put in for about 1,600 feet to improve conditions about the barnyards and vicinity. Necessary repairs were made to several buildings on the Station.

EXCURSIONS AND EXHIBITIONS

Exhibits of farm produce were made at the county fairs of Bellechasse, Montmagny, L'Islet, Kamouraska, Rimouski and Matane, and the Station also exhibited at the seed fairs held in the same counties during the winter.

Over 4,000 farmers visited the Station during the summer, and were present at practical demonstrations in the various lines of farm work. The Farm was also visited by members of the Council of Agriculture of Quebec and by the teachers and pupils of a number of schools and agricultural institutions.

EXPERIMENTAL STATION, CAP ROUGE, QUE.

REPORT OF THE SUPERINTENDENT, G. A. LANGELIER

CHARACTER OF THE SEASON

The six months during which plants grow in central Quebec were warmer, dryer and brighter than the average of eight years, the mean temperature being respectively 57·48 and 56·27° F., the precipitation 25·43 and 25·87 inches, the number of hours of sunshine, 1123·5 and 1084·5. The frost-free season lasted 138 days, from May 15 to October 1, which is exactly the average length since 1912. The following were very good: silage corn, timothy, currants, gooseberries, cabbage, cucumber, egg plant, garden peas, lettuce, parsley, sweet corn, barley, clover, potatoes, apples, grapes, strawberries, cauliflower, garden beans, muskmelons, ornamental shrubs, perennials; oats, wheat, raspberries, Brussels sprouts, carrots, celery, garden beets, onions, parsnips, annual flowering plants, bulbs were medium; field peas, roots, cherries, pears, plums were practically a failure.

METEOROLOGICAL RECORDS, 1919-20.

Month	Temperature F.			Precipitation				Sunshine
	Highest	Lowest	Mean	Rainfall	Snowfall	Total	Heaviest in 24 hours	Total Hours
1919								
April	56·0	8·2	34·28	1·81	13·00	3·11	0·60	117·6
May	80·0	29·2	51·05	3·49	.....	3·49	0·90	214·7
June	93·0	38·2	65·16	3·20	.....	3·20	1·28	228·0
July	90·0	45·2	67·40	7·10	.....	7·10	1·74	220·5
August	81·0	43·2	63·39	3·39	.....	3·39	0·97	207·7
September	80·0	32·2	55·31	4·21	.....	4·21	0·72	129·1
October	62·0	21·2	42·57	4·04	.....	4·04	0·75	123·5
November	49·0	5·2	30·45	2·25	12·50	3·50	0·80	51·5
December	39·0	−25·8	9·64	0·40	11·90	1·59	0·30	67·4
1920								
January	32·0	−29·7	1·93	0·00	35·00	3·50	0·80	71·1
February	39·0	−25·8	18·51	0·00	34·00	3·40	0·80	67·0
March	55·0	−19·9	24·33	1·86	18·50	3·71	1·30	142·0
Total	.....	.....	.....	31·75	124·90	44·24	.....	1,640·1

LIVE STOCK

In general, all live stock kept in very good condition throughout the year.

DAIRY CATTLE

The herd numbered 60 head on March 31, 1920, which is an increase of 13 over last year. There were 57 pure bred and 3 grade French Canadians. They are kept mainly for experimental work, but the sale of high-class breeding animals and clean dairy products brings in a good revenue.

Milk Production.—Eighteen heifers and cows, ranging in age from 2 to 14 years, finished a lactation period during the fiscal year. Their average production was 5,127 pounds of milk testing 4·4, which is equivalent to about 260 pounds of butter per

year. Seven poor milkers, sold since, are included in the above lot and it is interesting to note that, had they not been in the herd, the average production would have been 5,806 pounds of milk testing 4·5, which is equivalent to over 300 pounds of butter per year.

High Class French Canadian Cattle.—There are now, at the Cap Rouge Station, more cows and heifers which have qualified for Record of Performance than in any other herd. The four first daughters of the senior herd sire, entered in the test easily went through, which brought in the bull. As his dam qualified three times and is entered for the fourth, Delphis de Cap Rouge 3283 should throw some good milkers.

EXPERIMENTAL BREEDING OF DAIRY CATTLE

Project No. 135—Comparing methods of breeding dairy cattle.—The object is to compare close breeding, line breeding, and outcrossing. A cow is bred to her son, then to a bull in the same line, and lastly to a sire not related to her. The offsprings are compared for milk production, vitality and conformation. This was commenced in 1915 and it is yet too early to draw conclusions.

Project No. 1—Grading up a dairy herd.—This project was started in 1911 to find out if heifers out of grade cows, by a pure bred bull, would be better milkers than their dams. The sire used was an outstanding exhibition animal but not one of his daughters could qualify for Record of Performance though the dams of many of them had that distinction. This seems to indicate that the word "scrub" may sometimes apply to pure bred animals.

Project No. 134—Increasing milk production with a pure bred sire of known ancestry.—A grade French Canadian, Kate, gave 548 pounds of milk during the month following her first calving at Cap Rouge. To the service of a bull of unknown ancestry, she dropped a heifer, Reine, which gave 166 pounds of milk during the month following her first calving. Reine, bred to a bull whose dam qualified for Record of Performance, produced Francoise which gave 736 pounds of milk during the month following her first calving.

EXPERIMENTAL FEEDING OF DAIRY CATTLE

Project No. 4—Feed requirements of dairy heifers until calving.—All feed given to eight heifers was weighed until their age averaged 27 months 18 days. At this age their weight was 813 pounds. Each of them consumed 536 pounds whole milk, 5,668 pounds skim-milk, 881 pounds meal, 3,164 pounds hay, 377 pounds green feed, 4,235 pounds roots, 5,521 pounds corn ensilage besides being 96 days on pasture. It is easy to see that, at present prices for feeds, it costs a good deal to keep a heifer until she calves, which means that only good ones should be raised.

Project No. 3—Whole milk vs. skim-milk and supplements for calves.—Since 1917, three lots of calves, comprising 29 different animals, were fed differently until twenty-four weeks of age, one bunch receiving whole milk, the second, skim-milk and commercial calf meal, and the last, skim-milk and home mixed calf meal consisting of 6 parts corn, 3 parts oats, 1½ part flaxseed, by weight, all ground together. Calculating feed at the valuations of the start, in April, 1917, viz., whole milk at $2, skim-milk at 25 cents, home made calf meal, also commercial calf meal, at $5 per 100 pounds, bran at $40, hay at $15, silage and roots at $4 per ton, it cost $49 for each of the whole milk calves, $17.51 for each of the commercial meal calves, and $16.79 for each of the home-mixed meal calves. During the test, the average increase in weight of the whole milk calves was 228 pounds, of the home meal calves, 219 pounds, and of the commercial meal calves, 168 pounds.

EXPERIMENTAL HOUSING OF DAIRY CATTLE

Project No. 6—Keeping cattle in single boarded open front sheds.—Since 1915, three bulls have been kept all the year around in single boarded open front sheds, whilst two heifers, during the winter of 1918-19, and six, during the winter of 1919-20, received the same treatment. All these animals remained in fine health and did not seem to be at all affected by the cold weather.

EXPERIMENTAL MANAGEMENT OF DAIRY CATTLE

Project No. 5—Extra good vs. average rearing of heifers as influencing size and type, and production of the mature cow.—Twins were chosen for this experiment, so as to minimize the chance of error due to breeding. One of them, Eglantine de Cap Rouge 4159, was well fed, weighed 815 pounds just previous to dropping her first calf and gave 5,972 pounds of milk, qualifying for Record of Performance, during the first lactation period. The other, Elegante de Cap Rouge 4160, came in heat a couple of months later than her sister, aborted, was served again, weighed 645 pounds just previous to dropping her first normal calf and gave only 1,944 pounds of milk during this lactation period. This experiment is continued with other heifers, whilst a careful record will be kept of the two above mentioned.

HORSES

There were 61 horses on the Station on March 31, 1920, which is an increase of 34 over last year. There are 55 pure-bred French Canadians amongst the lot, and most of these are for the new Horse Farm at St. Joachim, Que. They are kept for experimental purposes, but the work which they perform and the sale of the colts are to their credit.

Work on the Farm

In a breeding establishment the number of hours of work of horses may be high and still the actual amount of work performed low, because youngsters and brood mares must receive special attention. This is the reason for discontinuing to give in this report the number of work hours. In general, too many horses are kept on farms, and by carefully planning operations or even by using a tractor when conditions warrant it, the number of work animals may be decreased. Breeders of good stock will not suffer from this, as high-class animals will continue to command remunerative prices.

High-class French-Canadian Horses

The studs of French-Canadian horses at Cap Rouge and at St. Joachim are admitted by everybody to contain the best and largest collection of these animals in existence to-day. In co-operation with the French-Canadian Horse Breeders' Association, it is intended to regenerate the breed and to form a class of horses weighing between 1,200 and 1,300 pounds which will not look out of place on the surrey or on the plough.

EXPERIMENTAL BREEDING OF HORSES

Project No. 7—Comparing methods of breeding horses.—This is to compare close breeding, line breeding and out-crossing. A mare is bred to her own son, to a stallion in the same line, and to a sire not related to her. The offspring is compared for constitution, size and conformation. It is yet too early to draw conclusions.

EXPERIMENTAL FEEDING OF HORSES

Project No. 11—Feed requirements of work horses.—All the feed eaten by a team was weighed during two and a half years. Their average weight was 1,270 pounds at the beginning of the experiment and 1,273 at the end. Each of them worked 1,736 hours and ate the following quantities of feed: 5,809 pounds hay, 6,604 pounds oats, 1,034 pounds bran, and 95 pounds molasses. Prices fluctuate so much nowadays that it seems useless to state how much horse labour has cost per hour, according to the above experiment, but it is easy for anybody to find this out at current prices. The above horses ate a little over 1½ pounds of hay and 2 pounds of concentrates per 100 pounds of their live weight, per day. This is somewhat more than is generally recommended, but they also worked more hours than farm teams generally do and they were kept in the best of condition at all times.

Project No. 10—Feed requirements of young horses until of working age.—All feed given to two colts and seven fillies was weighed until they were fit to work, when their average age was 33 months and 9 days and their weight 1,265 pounds. Since weaned, at the age of five months, each had received 363 pounds skim milk, 4,018 pounds oats, 4,506 pounds bran, 10,326 pounds hay and had been at pasture six months. The amount of feed could have been decreased if more pasture had been available, but it is a fact that a young horse, ready to work, costs a good deal of money, which means that only good mares and stallions should be used, so as to minimize the number of culls.

EXPERIMENTAL HOUSING OF HORSES

Project No. 12.—Keeping horses in single-boarded open front sheds.—Since 1913, twenty different young horses were wintered, during the first year of their life, in single-boarded open front sheds and, though the temperature went down as low as 34° F. below zero, never one was seen to shiver. Stallions are kept in sheds of this kind all the year around and brood mares have been wintered in the same manner.

EXPERIMENTAL MANAGEMENT OF HORSES

Project No. 8—Raising fall colts.—Since 1915, four colts were dropped in the autumn and weaned in the spring, which allowed the dams to do much more work during the cropping season. The youngsters were raised in loose boxes, which they shared all winter with their dams. There are two difficulties to be watched: the foals are liable to get too fat and top heavy, that is the weight of the body is too great for the limbs; and it is hard to get a mare, foaling in the autumn, to settle that year, as she generally goes until spring before she is safely in foal.

Project No. 9—Work vs. no work for brood mares.—The same mare was bred five years running and subjected to different ways of exercising. Two winters, she was used reasonably all the time until foaling; two others, she was kept outside, with a single-boarded shed as a shelter, until a few weeks before dropping her young, when she was put to medium work; and another time she was kept idle in a box stall to within a month or so of foaling, when she was worked moderately. She dropped a strong foal each time, which seems to show that if exercise is essential for the brood mare, the mode of exercising is not of importance.

SHEEP

The flock numbered 88 head on March 31, 1920, which is an increase of 25 over last year. They are all pure-bred Leicesters. The main point in keeping them is experimental work, but the sale of breeders and of wool brings in considerable money.

EXPERIMENTAL BREEDING OF SHEEP

Project No. 172—Rams out of prolific dams as sires of prolific ewes.—The same ewes are bred to rams out of prolific dams and also out of non-prolific dams. Records are kept not only of the number of offspring, but of their constitution, size, conformation, and fleece. It is yet much too early to draw conclusions, as this experiment was only commenced in 1916.

EXPERIMENTAL FEEDING OF SHEEP

Project No. 13—Winter feed requirements of breeding ewes.—During three years all feed was weighed which was given to 41 breeding Leicester ewes, of a little above medium size, for about 200 days, from the time in autumn when there was not enough good pasturage, until spring when grass was sufficient. Each ewe, during that time, ate per day 3·16 pounds of hay, 1·63 pounds of swedes, 0·93 pounds of oats, and 0·63 pounds of bran.

EXPERIMENTAL HOUSING OF SHEEP

Project No. 14—Raising lambs in single-boarded open front sheds.—The ewes are wintered in single-boarded sheds, with an open front facing about south. They are brought to the sheep barn a short while before lambing, but as soon as the youngsters are from a week to two weeks old, and after they have been docked and ear marked, they are sent back to the shed with their dams. Only two lambs, both triplets, were lost out of 72, in 1919 and 1920, so that this way of raising them looks like a good one.

POULTRY

The flock numbered 541 on March 31, 1920, which is an increase of 260 over last year. Out of that number there were 199 for the Quebec Egg Laying Contest and the Farm owned 342, all Barred Rocks. Whilst the main purpose is to do experimental work with them, the revenue from the sale of breeders, meat and eggs is not to be disdained.

Province of Quebec Egg Laying Contest

The Laying Contest for the Province of Quebec was placed at Cap Rouge and twenty pens of ten birds each, entered as follows on November 1, 1919: 70 Barred Rocks, 60 Single Comb Rhode Island Reds, 30 Single Comb White Leghorns, 10 Rose Comb Brown Leghorns, 10 Single Comb Black Leghorns, 10 White Rocks, 10 Canadians. All birds are to remain in the houses for the whole twelve months.

Egg Production

An average of 183 layers were kept during the year, and the total egg production was 15,816 eggs, which is 86 per bird. This is just half a dozen eggs per layer more than last year, or an increase of 7·5 per cent.

EXPERIMENTAL BREEDING OF POULTRY

Project No. 161—Pedigree work with poultry.—Pullets are trap-nested and only those kept for breeding purposes which laid more than 30 eggs during November, December, January, February, and more than 150 during the 12 months following the date on which they first laid. Eggs from each bird are placed in separate wire cages in the incubator, near the end of the hatch, with the number of the layer on each cage. The chicks are leg-banded before leaving the wire cage and a sealed band is put, three weeks later, through the thin part of a wing, so that their identity is never lost. The pedigree of each wing-banded bird can thus be traced as easily as that of horses, cattle, sheep or swine.

Project No. 162—Hatchability of eggs and viability of chicks from good and from poor layers.—It is claimed by some that a hen which lays a great many eggs loses strength and cannot transmit to its offspring the vitality necessary for large production. To throw light on this question notes are taken of the number of eggs laid by a certain number of good layers and a certain number of poor layers, the number placed in the incubator, the number of chicks hatched out and the number living at three months. No conclusions can yet be drawn.

Project No. 121—Hatchability of eggs and viability of chicks from pullets and from hens.—Will eggs from hens hatch better and produce stronger chicks than eggs from pullets, is a subject on which more light should be thrown. To help answer the question satisfactorily, notes are taken of the number of eggs laid by each lot, the number placed in the incubator, and the number of chicks hatched and living at three months. More data will have to be gathered before figures are given out.

EXPERIMENTAL FEEDING OF POULTRY

Project No. 79—Commercial grain vs. screenings.—This experiment has now run four seasons, November to February inclusive, each year. An average of 24 birds were in each of two pens and both received practically the same quantities of animal and green food, meal, grit and shells, one lot getting commercial grain and the other screenings. The average of four trials shows, that commercial grain gave more profit because the birds each increased in weight by about ten ounces. The number of eggs laid by each pen was practically the same, but, leaving aside the increase in weight of the birds, the cost of egg production was lowest with screenings.

Project No. 80—Roots vs. clover leaves.—This experiment was conducted during four seasons, November to February inclusive, each year. An average of 23 birds were in each pen and both received practically the same quantities of grain, meal, animal food, grit and shells, one lot getting roots and the other dry clover leaves. The birds receiving dry clover leaves took on a little more weight, laid better and produced eggs at a lower cost than those receiving roots. The dry clover leaves fed in this experiment were gathered on a barn floor and given in a box.

Project No. 81—Skim milk vs. beef scraps.—This experiment has now run four seasons, November to February inclusive, each year. An average of 25 birds were in each pen and both received practically the same quantities of grain, meal, grit and shells, one pen getting skim milk and the other beef scraps. The skim milk pen gained a little more weight and produced eggs for about half the price of the beef scrap lot.

Project No. 82—Water vs. snow.—This experiment was conducted during four seasons, November to February inclusive each year. An average of 22 birds were in each pen and both received practically the same quantities of feed, one pen getting water and the other snow as soon as it was available in the autumn and all through winter. The pen getting snow laid a little better and the cost of egg production was somewhat lower for them.

EXPERIMENTAL HOUSING OF POULTRY

Project No. 83—Winter temperature in poultry houses of different widths.—For five years, during November, December, January, and February, the highest and the lowest temperature were taken outside, in a colony house 8 feet wide, in a laying house 12 feet wide, and in another house 16 feet wide. All these buildings were of the shed roof pattern, had about twice the area of cotton as of glass and were placed so as to be about equally sheltered from the wind and to get about the same amount of sun. The average difference between the highest and the lowest temperature, during all that time, was 38·1 degrees outside, 24·9 in the narrow house, 23·3 in the colony and 21·7 in the wide house.

EXPERIMENTAL MANAGEMENT OF POULTRY

Project No. 84—Comparison of layers at different ages.—For this experiment, four pens of about 25 birds each were used, five years in succession, from November to February inclusive. If the cost of production of one dozen of eggs, during winter, is taken as 100 for early pullets, hatched before May, it would be represented by 249 for yearling hens, by 280 for late pullets, hatched after April, and by 848 for two year old hens. A remarkable thing is that a pen of early pullets, giving by far the highest profit one winter, went down to second place when, the following year, they were compared, as yearlings, with another pen of early pullets.

EGG PRESERVATIVES

Project No. 78—Comparison of different methods of preserving eggs.—Eight different ways of preserving eggs have been tried for four years, viz., lime water, water glass, wrapping in paper and leaving alone, wrapping in paper and turning daily, putting away in oats, putting away in sawdust, and two commercial preservatives. Samples were tested at the Chemical Division, Central Experimental Farm, Ottawa, and at the Cap Rouge Station. Up to the present, only lime water and water glass have given full satisfaction.

BEES

Eleven colonies were kept during 1919, which is one less than the previous year. They are mostly hybrids.

Production of Honey

The season was a very bad one in the district of Quebec for the production of honey. The reason for this, according to beekeepers of long experience, is that the weather was bad, either rainy, cloudy or extremely windy, during the very short period when bees gather honey. The greatest yield from one colony at the Station was 32 pounds, which shows how poor the crop was.

Experimental Feeding of Bees

Project No. 16—Comparison of different kinds of stores for winter feeding of bees.—During the last four winters, some colonies were fed early gathered honey, others late gathered honey, others early gathered honey and sugar syrup, and others only sugar syrup. Results, to date, are contrary to expectations, as the bees fed on sugar alone and on late gathered honey only, have done practically as well as those fed on early gathered honey alone and on early gathered honey with sugar. It would thus seem better to await further experimental work before coming to conclusions.

FIELD HUSBANDRY

Work for this Division comprises agricultural engineering, crop management and soil management.

AGRICULTURAL ENGINEERING

Owing to the scarcity of funds, very little could be done during 1919 at clearing land, draining, fencing and road making. A good horticultural barn was put up, with a large under-ground cellar of 40x25, and rooms for washing vegetables, packing small fruit, and storing seeds.

CROP MANAGEMENT

Project No. 36—Field Crop Areas and Yields.—Corn, hay and barley were a better crop than usual, whilst swedes, oats, wheat and peas were lower.

Crop	Yield per acre in pounds		
	1919	Average	For
Longfellow corn	20,929	16,496	8 years
Good Luck swedes	11,410	23,599	8 years
Timothy hay	4,530	3,772	8 years
Clover hay	4,256	4,197	8 years
Banner oats	1,175	1,701	8 years
Manchurian barley	1,475	1,179	6 years
Huron wheat	1,528	1,647	5 years
Arthur peas	1,260	1,408	5 years

Project No. 35—Cost of production of field crops.—Since 1913 inclusive, accurate records have been kept on 106 acres, for the three main crops of the district, swede turnips, oats and hay, with the following results:—

Crop	1919		Average for seven years	
	Yield per acre	Cost	Yield per acre	Cost
	lbs.		lbs.	
Good Luck swede turnips	11,460	$10 82 per ton...	24,628	$3 70 per ton.
Banner oats	1,339	0 59 per bush.	1,804	0 39 per bush
Clover and timothy hay	4,378	7 35 per ton...	4,540	6 12 per ton

An increase in yield lowers the cost per acre, invariably, in the above cases.

Project No. 43—Different rotations.—A three, four, a five and a six-year rotation have been compared for nine years. Contrary to expectations, the profit seems to be greater as the rotation is lengthened, but it is also easily seen that the land is getting weedier each year on these longer rotations. This is work which must be continued for a great many years before reasonable conclusions can be arrived at.

Project No. 38—Different rates of sowing oats.—This experiment, commenced in 1913, comparing thirteen different rates of sowing oats, from 1 to 4 bushels inclusive, going up by a quarter of a bushel, has been run on a sandy loam of better than ordinary fertility. The average, for seven years for the five best rates giving the yield in pounds per acre, less the amount of seed used, is as follows: 3¾ bushels, 2,025 pounds; 2½ bushels, 1,995 pounds; 3¼ bushels, 1,965 pounds; 2¾ bushels, 1,890 pounds; 3 bushels, 1,868 pounds. Until more light is thrown on the subject, it is recommended to sow 2 1/2 bushels per acre on soil such as the above mentioned.

Project No. 39—Different rates of seeding timothy, red clover and alsike mixed.—Since 1912 inclusive, 148 plots of 1/60 acre each were used for this project. On half of this number of plots, 12 lbs timothy, 8 pounds red clover and 2 pounds alsike were sown per acre, with Banner oats as a nurse crop, whilst the others only received half of these quantities. The thick seeding gave 193 pounds more hay per acre, or only an increase of about 4 per cent, which shows that on a sandy loam where fertility is not as necessary to sow large quantities of grass and clover seed as on a piece of badly worked land.

Project No. 40—Yield of clover hay after different kinds of nurse crops.—Since 1912, all the trial plots, 378 in number, were seeded down with timothy, red clover and alsike, at the rate of 8, 12 and 2 pounds respectively per acre. The crop of clover hay was at the rate of 2 tons and 1,393 pounds per acre after barley, 2 tons 1,237 pounds after wheat, 2 tons 953 pounds after oats, 1 ton and 1,898 pounds after peas.

Project No. 41—Yield of clover hay with different rates of sowing oats.—For seven years, Banner oats was sown at different rates and the crop of clover was weighed the following year, to see after which density could be had the largest quantity of hay. Contrary to expectations, the rates above 2 1/2 bushels of oats per acre have been followed, in general, by a larger crop of clover hay than those below. It is interesting to note that the average rate of 2 1/2 bushels of oats per acre has been followed by exactly the average of the clover crop for all densities.

SOIL MANAGEMENT

Project No. 42—Spring vs. autumn ploughing for silage corn.—The average of three years is all in favour of fall ploughing, as the yield was 16 per cent more and the land was freer of weeds, which necessitated less hand labour. This is no small plot work, as all the crop was weighed on 26·40 acres.

CEREALS

Experiments were continued with the main cereals of the district, grown singly and in mixtures.

Project No. 19—Improvement of barley by selection.—In 1914, this project was started with the results that for 1918 and 1919 the Cap Rouge selection is at the head of the six varieties in the trial plots.

Project No. 23—Variety tests of barley.—Since 1911, seventeen varieties and strains of two-rowed and six-rowed barley were tried and nine of them were dropped because they did not yield enough. The highest yielder, in 1919, was Cap Rouge selection of Manchurian which yielded at the rate of 1,860 pounds, or about 39 bushels per acre, and came to maturity in 86 days. The above variety is the one recommended to farmers of this district.

Project No. 140—Variety tests of field beans.—In 1919, two varieties of field beans were tested. The Norwegian produced at the rate of 1,633 pounds per acre and the Yellow Rye at the rate of 865 pounds. Both took about the same time, 103 days, to mature. The difference in yield was probably due mostly to the freeness of disease in the Norwegian.

Project No. 25—Variety tests of flax.—Since 1915, two varieties of flax have been tried. Longstem, more adapted to the production of fibre, had an average length of about three feet, took 104 days to mature and produced at the rate of 559 pounds of seed per acre, whilst Novelty had an average length of some two feet, took 109 days to mature and produced at the rate of 811 pounds of seed per acre.

Project No. 26—Variety tests of oats.—Since 1911, fourteen different varieties and strains of oats have been tried and seven of them were set aside because they did not yield enough. Banner is the one which is recommended here. For an average of eight years, it produced at the rate of 2,244 pounds, or 66 bushels, per acre and came to maturity in 99 days

Project No. 34—The influence of the preceding crop on the cooking qualities of field peas.—Arthur peas have been used three years for this experiment. The average results show that if the time to cook field peas grown after grain is 100, it would be represented by 139 for those grown after a hoed crop and by 170 for those grown after sod.

Project No. 24—Variety tests of field peas.—Since 1911,, twelve varieties or strains of field peas have been tried and eight of them were dropped because they did not yield enough. Arthur is the variety recommended to farmers of the district. For an average of eight years, it yielded at the rate of 1,905 pounds, or about 32 bushels, per acre, and took 97 days to come to maturity.

Project No. 22—Improvement of spring wheat by selection.—In 1913, this project was started, with the result that, for 1918 and 1919, the Cap Rouge selection stands second, for yield, amongst the eleven varieties which were in the trial plots.

Project No. 27—Variety tests of spring wheat.—Since 1911, twenty varieties and strains of spring wheat have been tried and eleven set aside because they were low yielders. Huron is recommended to farmers of the district. Its average production, for nine years, is 1,280 pounds, or over 21 bushels, and it took 100 days to come to maturity.

Project No. 18—Mixtures for grain production.—Since 1912, twelve different mixtures were tried for grain production, but these have been cut down to five, as the others did not yield enough. In general, mixtures have not yielded as much per acre as the different grains sown alone. Another disadvantage is that a farmer generally feeds the mixture as harvested, when the proportion of each grain is often not what it should be for the purpose.

FORAGE CROPS

Investigations were continued with the forage crops suitable for this district.

Project No. 57—Improvement of alfalfa by selection.—This was started in 1915 with Grimm seed which was sown on an exposed place, so that by natural selection, the plants not strong enough to withstand the rigors of winter could be rogued out. Then 600 plants were put in and progeny record notes are kept from the most promising.

Project No. 56—Variety tests of red clover.—This project is to compare different varieties or strains of red clover as to hardiness, yield and number of crops they will produce. Three varieties are on test: the ordinary commercial red clover, a variety from Sweden, and a C.E.F. strain which is said to be perennial. A careful record will be kept of the date of cutting, the yield, and the percentage living the second, third, and fourth years.

Project No. 44—Variety tests of silage corn.—Since 1913, twenty-two varieties or strains of corn were tested for silage production. Longfellow is recommended to farmers of the district. For an average of six years, it yielded forage at the rate of 18,339 pounds per acre.

Project No. 45—Variety tests of field carrots.—Since 1911 nineteen varieties or strains of field carrots were tested. Improved Short White is at the top with a production of 16,474 pounds per acre, for an average of eight years.

Project No. 55—Methods of helping the germination of mangel seed.—The results of twelve different tests made in flats, in the greenhouse, show that if the check is taken as 100, soaking seed in water for fifteen hours would give a germination of

106; soaking seed in a mixture of liquid manure and water for fifteen hours, of 104; packing the soil, of 99; watering every day, of 99; packing the soil and watering, of 95; mixing a complete fertilizer with the soil as in harrowing, of 84; applying a complete fertilizer in the row with the seed, of 55; mixing salt with the soil as in harrowing, of 48; applying salt in the row with the seed, of 14.

Project No. 53—Variety tests of swede turnips.—Since 1911 forty-eight varieties and strains of swede turnips were tested. Good Luck is recommended to farmers of the district. For an average of nine years, it has yielded at the rate of 34,701 pounds per acre.

Project No. 157—Trueness to type of swede turnips produced from commercial seed.—In 1919, seed was obtained from the trade of fifty-one varieties or strains of swede turnips. When the crop was pulled, a careful examination showed that 36 or 71 per cent were true to type and 15 or 29 per cent were not. Of these 15, 5 were not of the right colour, and ten were not of the right shape. Of the latter ten, 2 were 5 per cent off, 5 were 10 per cent off, 2 were 15 per cent off and 1 was 50 per cent off.

FERTILIZERS

Project No. 141—Influence of phosphoric acid in promoting maturity of corn.—The result of this experiment, for one year, shows that the addition of about 500 pounds of acid phosphate, per acre, to twenty tons of good barnyard manure on a sandy loam of better than average fertility, made no difference in the degree of maturity and, moreover, did not increase the crop.

HORTICULTURE

Experiments in horticulture relate to fruits, ornamental plants, and vegetables.

FRUITS

Projects on hand deal with apples, cherries, pears, plums, grapes, black currants, red currants, white currants, gooseberries, strawberries and raspberries.

Project No. 91—Comparison of different cover crops for an apple orchard.—The object is to find out a good cover crop for an orchard. The following are compared: red clover sown every year; vetches sown every year; rape sown every year; clover followed by rape in a two year rotation; permanent sod, hay used as mulch for trees; permanent sod, hay taken away. It is remarkable that, for an orchard planted in 1913, the growth is much weaker where there is a permanent sod.

Variety Tests

Project No. 87—Apples.—About 150 varieties, consisting of some 900 trees, were on test. The largest crop was from an Okabena planted in 1911 which gave 38 gallons of fruit. The best apples adapted to this district are Yellow Transparent, Lowland Raspberry, Red Astrakan for summer; Duchess, Montreal Peach for autumn; Wealthy, Milwaukee, Wolf River, Fameuse, McIntosh Red, McMahon White for winter.

Project No. 86—Cherries.—None of the sweet cherries is hardy enough for this district. Of the sour ones, 16 varieties, consisting of 55 trees, were on test. Most of these had been planted for 6 to 8 years and though some bore fruit previously, not one of them did so in 1919. Early Richmond, Griotte Morello, Montmorency Large, Orel No. 25, and Vladimir are promising for Central Quebec.

Project No. 93—Pears.—There were 4 varieties of pears, consisting of 40 trees, on test. Though planted in 1913, they have not yet produced, and it is nearly sure that this is a fruit which will not be a success so far north. All the trees made a good growth in 1919 and were in fine condition in the autumn.

Project No. 76—Plums.—There were 32 varieties of plums, consisting of 130 trees, on test. Most of these were planted between 1911 and 1913. None of the Europeans fruited in 1919, but a few of the Americans did so, amongst which were Bixby and Mankato. Contrary to expectations, a larger percentage of the European varieties have lived at Cap Rouge than of the American varieties whose wood breaks much too easily.

Project No. 122—Grapes.—There were 28 varieties of grapes, consisting of 120 plants, on test. Many of these fruited in 1919, the ones which were nearest maturity being Manito, Champion, and Early Daisy amongst the blacks, Wyoming and Moyer amongst the reds, and Starr Early amongst the greens.

Project No. 68—Black currants.—Of the fourteen varieties of black currants on test for eight years, Climax leads with an average yield of 8,065 pounds per acre, followed by Saunders with 6,931 pounds and Topsy with 6,658 pounds. The highest yield was fruit or at the rate of 17,424 pounds per acre. They can be recommended for this district in the order mentioned above.

Project No. 69—Red currants.—Of the eleven varieties of red currants on test for eight years, Fay leads with an average yield of 9,272 pounds per acre, followed by Red Grape with 8,275 pounds and Red Cross with 7,951 pounds. The highest yield was obtained in 1919 from six plants of Red Cross, set in 1912, which produced 63·75 pounds of fruit or at the rate of 15,427 pounds per acre. For this district, Fay Perfection (7,798 pounds per acre) and Red Cross are to be recommended, as the fruit of Red Grape is too small and the clusters do not fill well.

Project No. 70—White currants.—Three varieties have been on test for eight years and have yielded as follows, per acre: White Cherry, 4,326 pounds, White Grape, 4,293 pounds; Large White, 3,584 pounds. The highest yield was obtained in 1916 from six plants of Large White, set in 1911, which produced 29.75 pounds of fruit or at the rate of 7,199 pounds per acre. White Grape, on account of its superior quality, is the most recommendable variety for this district.

Project No. 71—Gooseberries.—Of the eleven varieties of gooseberries on test for eight years, Houghton leads with an average yield of 19,821 pounds per acre, followed by Downing with 14,227 pounds and Queen Anne with 14,054 pounds. The highest yield was obtained in 1919 from six plants of Houghton, set in 1912, which produced 150·25 pounds of fruit or at the rate of 36,360 pounds per acre. The varieties to be recommended for this district are Silvia (13,560 pounds per acre), Downing and Queen Anne, the two first on account of the size and quality of the fruit and the latter because it is firm and a good shipper. Houghton is a heavy yielder, but though it might suit for canning purposes, its fruit is too small for ordinary markets.

Project No. 72—Raspberries.—A new plantation was made in 1919, so that this year is not included in the results. Of the six varieties of red raspberries on test for at least six years, Herbert leads with an average yield of 2,113 pounds per acre, followed by Brighton with 2,085 pounds and King with 1,971 pounds. The highest yield was obtained in 1916 from twelve plants of Herbert, set in 1912, which produced 36·5 pounds of fruit or at the rate of 5,445 pounds per acre. The varieties recommended for this district would be the ones mentioned above, in the order named, with a preference for King if extra earliness is wanted.

Project No. 74—Comparison of methods of planting strawberries.—The hill system is compared with the matted row. The average of two years shows a yield of 0·66 pound per plant for the first and 0·76 for the second. But as the plants were set 30 by 12 inches for the hill system and 42 by 12 inches for the matted row, the yield was at the rate of 11,651 pounds per acre in the first instance and 9,891 in the second.

Project No. 73—Variety tests of strawberries.—Of the twenty-four varieties of strawberries on test for at least five years, Valeria leads with an average yield of 9,077 pounds per acre, followed by Cassandra with 8,961 pounds and Portia with 8,226 pounds. The highest yield was obtained in 1916 from 46 plants of Portia, set in 1914, which produced 44 pounds of fruit or at the rate of 13,888 pounds per acre. Valeria is too small and not coloured enough; Cassandra is good in every respect; Portia is late and very firm to ship, but is an imperfect variety. Excelsior, with an average of 5,241 pounds per acre, is recommended for an early crop, whilst, of all commercial kinds, Dunlap, with an average of 7,705 pounds per acre, seems the best.

ORNAMENTAL PLANTS

Tests have been carried on with 370 varieties of annual flowers and bulbs, 170 varieties of perennial flowers, and 140 varieties of ornamental shrubs and trees. As a market proposition daffodils, sweet peas, asters, and delphiniums would be remunerative to a grower near a fair sized city. The best liked shrubs are the lilacs, hydrangeas, roses, spireas, and honeysuckle.

VEGETABLES

Tests were carried on with a number of varieties and strains of the following vegetables: Asparagus, 11 varieties; garden beans, 66; garden beets, 34; cabbage, 48; garden carrots, 48; cauliflower, 9; celery, 13; sweet corn, 69; cucumbers, 30; muskmelon, 6; onions, 33; parsnips, garden peas, tomatoes, potatoes, turnips and rhubarb.

Experiments in the improvement by selection of the following vegetables were carried on: Asparagus, garden beans, garden beets, cabbage, garden carrots, sweet corn, garden peas, and tomatoes. Some of this work was started several years ago and some in 1919. Before definite results can be secured it will be necessary to continue this selection for a number of years.

There were nineteen different cultural experiments with vegetables as follows: Yield of asparagus when plants are set at different distances: sowing garden beans—one vs. four varieties; yield of garden beets when plants are thinned to different distances; comparison of methods of protecting cabbage against root maggots; yield of garden carrots when plants are thinned at different distances; comparison of methods of protecting cauliflower plants against root maggots; comparison of methods of blanching celery; comparison of different sizes of onion sets for yield; comparison of yields of onions which have been sown, transplanted, or planted as sets; yield of onions when plants are thinned at different distances; yield of parsnips when plants are thinned at different distances; sowing garden peas—one vs. four varieties; comparison of different kinds of potato sets for yield; effect on yield of potatoes by plastering the seed; comparison of methods of treating rhubarb roots for forcing; comparison of methods of starting tomato plants; comparison of methods of training tomato plants; methods of pruning tomato plants; methods of artificially ripening tomatoes.

EXTENSION AND PUBLICITY

The work for this division consists in making exhibits at fairs and in distributing literature.

Exhibitions

Exhibits were made at Three Rivers, Quebec, Baie St. Paul, St. Romuald, and St. Michel. It is estimated that over 65,000 persons saw the Station exhibit at these five places. Diplomas were received from the two large fairs, Three Rivers and Quebec. It is interesting to note that the greatest number of inquiries were about horticulture, bees, poultry, cereals, forage plants, live stock and field husbandry in the order named.

Publicity

At the above exhibitions, and from the Station, nearly 4,000 circulars and bulletins were distributed during the year, whilst a great many names were added to the mailing list of the Publications Branch.

DISTRIBUTIONS

The following all grown at Cap Rouge, were distributed during the fiscal year: 312 apple trees, 126 black currant bushes, 111 red currant bushes, 78 white currant bushes, 18 gooseberry bushes, 132 raspberry canes, 3,150 strawberry plants, 360 perennial flowering plants, besides 106 packages of tomato seed, 180 of flower seed, 62 of cabbage seed, 25 of potatoes, 5 of sweet corn, 4 of garden beans and 10 of field beans.

VISITORS

There came 4,945 visitors to the Farm during the year, besides the large numbers, sometimes over one hundred at a time, who visit the Station on Sundays or holidays. Anybody asking for information is given special attention and it would be hard indeed to find even a few persons who could say that they have not been courteously treated at Cap Rouge.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT, J. A. McCLARY.

THE SEASON

The weather throughout the month of April was dull and wet. Ploughing was commenced on April 19 and no seeding was done until May 8. The fine weather the latter part of May enabled farmers to get their seeding practically all completed.

The clover wintered very well and we commenced cutting the first crop on June 17, the second crop being used for silage purposes. The crop of hay in the district was above the average.

The grain crop was extra good and reaping was commenced on August 16. We commenced to harvest corn for silage purposes September 13. A very satisfactory yield was secured.

October was dull and wet, rain falling on fourteen days.

The first snowfall of the season was on November 5 when we had a fall of 8 inches, after which the weather was fine and a considerable amount of ploughing was done.

The weather in December was quite severe, the St. Francis river freezing over on the 16th, where a year ago it froze over January 7.

The weather through the winter was remarkably cold which was very hard on fruit trees and shrubs throughout the district.

METEOROLOGICAL RECORDS, 1919-20

Month	Temperatures					Precipitation			Total Sunshine Hours
	Maximum		Minimum		Mean	Rainfall	Snowfall	Total	
1919	Date	°	Date	°	°	Inches	Inches	Inches	
April	23	68	4	0	37·43	1·32	13·6	2·68	103·9
May	23	77	6	25	51·75	2·99	.....	2·99	213·8
June	5	93	29	30	64·33	3·19	.....	3·19	248·7
July	4	92	8	40	65·82	3·18	.....	3·18	239·6
August	7	83	12	35	62·19	3·59	.....	3·59	196·8
September	21	83	27	26	54·81	4·31	.....	4·31	138·2
October	10	74	30	18	43·93	6·63	.....	6·63	103·0
November	8	58	28	− 4	32·14	1·29	14·5	2·74	52·6
December	13	45	18	−23	11·37	0·45	6·0	1·05	98·3
January (1920)	7	35	26	−44	1·60	.....	21·1	2·11	84·6
February	3	44	1	−47	12·65	.....	19·0	1·90	85·6
March	25	66	2	−33	55·32	0·79	23·0	3·09	150·5
Total	.....	818	.....	23	493·34	27·74	97·2	37·46	1,715·6
Average per month, 1919-20	.....	68·16	.....	1·91	41·11	2·77	16·2	3·12	142·9
Average per month, 1918-19	.....	65·50	.....	10·8	40·81	2·98	13·56	3·28	132·9
Average per month, 1917-18	.....	65·75	.....	4·25	36·39	3·45	16·8	3·29	130·9

LIVE STOCK

Horses.—There are at present eighteen horses at this Station, consisting of three registered Clydesdale mares, one registered Clydesdale stallion, one registered Clydesdale filly born in 1918, one registered Clydesdale filly born in 1919, one carriage horse, nine grade Clydesdales and two grade Percheron work-horses.

The mares are bred to foal in August or September so as to have the use of them in the spring when horse labour is so necessary in getting the crops in. The foals are run with their dams until March when they are weaned, and the mares put into condition for spring's work. Work-horses not needed in the winter are run in yards with good shelter and fed a ration consisting of 20 pounds hay, 30 pounds silage and 2 pounds bran per day.

Cattle.—The Ayrshire herd at this Station on March 31, 1920, consisted of forty head as follows: One aged stock bull, nineteen cows, two two-year-old heifers, seven yearling heifers and eleven calves.

The young stock from our herd sire, "Gardrum Bold Boy"—47138—is looking very promising and, with the excellent Record of Performance that this bull has back of him, we are looking for good results from his calves. This Station has never offered any females for sale as the policy of the Farm is to build up a herd from the small foundation we had to start with, in order to keep the herd as clean and healthy as possible. The young bulls are sold to farmers when from six to twelve months old, from which we expect to see good results.

Shorthorns.—Our Shorthorn herd consists of three cows, two two-year-old heifers, two yearling heifers, one heifer calf, one bull calf and one herd bull, "Kentville Tudor"—123902. This bull was bred at the Kentville Experimental Station from a dam in the Record of Performance test with a record of over 8,000 pounds milk. Three of these animals were purchased in the month of March as an acquisition to strengthen our present herd.

Beef Steers.—There was purchased in the fall of 1919 ninety-two steers which were tied in the barn on November 10. They were fed corn, clover silage and hay until January 15, when a light grain ration of 2 pounds per day was commenced and gradually increased to 7 pounds per day on May 12. These cattle were sold on May 12 and an average gain of 270·10 pounds was made.

Sheep.—The sheep at this Station comprise fifty-nine head as follows:—One registered Oxford Down ram, nine registered ewes, thirty-four grade Oxford ewes and fifteen shearlings. The wool and lambs from this flock are disposed of through the Sherbrooke County Wool Growers' and Sheep Breeders' Association, which has done much to enable the farmers to procure better prices for these products than heretofore by having the wool graded as well as the lambs so that they can be offered to prospective buyers by the different grades that they require, thereby receiving higher prices.

Swine.—There was on hand on April 1, one Yorkshire boar, five brood sows, twenty-four breeders and seventeen young pigs. We have sold throughout the year to the farmers in this district, a number of breeders from our lot, both males and females, which seem to be in good demand.

POULTRY

A start was made in poultry work on this Farm in the spring of 1919, by purchasing eggs and incubating them on the Farm. All chicks were hatched between May 15 and June 12 and were brooded in colony houses 10 by 12 feet in size, with coal burning brooders for heat. These houses were moved out into the field when the chicks were two months old to give more free range. A strict account of all the feed used during each month was kept and charged at market price. The feed used during the last two weeks in May was charged in the June account and the following is the average cost per chick for feed during the following months: June 3¼ cents; July 8½ cents; August 15½ cents; September 18¾ cents; and October 22½ cents.

To demonstrate the advantage of fattening poultry before marketing, two lots of cockerels were weighed before being put into fattening crates, valued at the local price for range birds and an account was kept of feed used to fatten them for three weeks. At the end of that time they were again weighed and valued at the local price for crate fed chickens alive, and then they were killed and marketed at best market prices.

Lot No. 1

No. Birds	Total Weight	Local price for range stock	Value	Live wt. after 3 weeks	Local price for quality	Value	Dressed Weight	Price	Value
45	148	0·26	$38 48	209	0·30	$62 70	185	0·41	$75 85

Cost of feed for 3 weeks $10.25 or 16¾ cents per pound of gain.

Lot No. 2

36	162	0·26	$42 12	211	0·30	$63 30	187	0·41	$76 67

Cost of feed for 3 weeks $8.80 or 17½ cents per pound of gain.

Sour skim-milk was used in Lot No. 1 to moisten mash instead of water, which accounts for better gains at lower cost per pound gain than in Lot No. 2.

It was found that the sale of cockerels and cull pullets left a balance on hand after paying cost of all feed until November 1. This left 215 pullets, some of which were commencing to lay and could not have been replaced for an average of $2.50 each, on hand to commence paying their own way. These pullets were housed in straw loft type houses which have proved very satisfactory for this climate. All birds were trap-nested from November 1 and some very interesting records have been secured. The vast difference in various individuals in their ability to produce eggs is very marked. In the same pen, ten of the best individuals laid during the four winter months November 1 to February 29, 672 eggs or an average of over 67 eggs per bird, while the ten poorest producers only laid 118 eggs or an average of a little over 11 eggs each. The average producers only laid 118 eggs or an average of a little over 11 eggs each. The average price of eggs for the four months was 84 cents, therefore the eggs laid by the first ten would be worth $47.04 while the eggs from the ten poorest producers would only amount to $7.26. These birds were all of even maturity and under the same care. The average cost per bird for the four months was $1.22 or $12.20 per 10. Thus the 10 best producers would have a profit of $34.84 while the 10 poorest producers would be a loss of $4.94.

At the end of February all pullets which had not laid more than 25 eggs during the four winter months, November 1 to February 29, were culled out and disposed of as market poultry. The pullets which laid during same period more than 50 eggs were put into three pens and mated to pedigreed males which were purchased and were out of hens which had laid over 200 eggs the previous year. All chicks from those matings were pedigree banded and their number recorded for further selection. The remainder of the pullets were mated to males from high producing stock and the chicks from those matings were toe-punched. The incubator has been started again about March 20, and is doing good work so that prospects are promising for another year.

Summary of Egg Production for Five Months from November 1, to March 31, 1920.

Month	No. Pullets	Cost of feed	Eggs laid	Price sold	Total value	Profit	Loss	Average Eggs per bird	Average Profit per bird
		$ cts.		cts.	$ cts.	$ cts.	$ cts.		
November	215	46 55	306	90	22 95	.....	23 60	1⅜	.....
December	206	62 17	2,142	90	160 65	98 48	.....	10⅜	47⅞
January	206	63 02	2,663	80	177 52	114 50	.....	12⅞	56¼
February	*205	64 05	2,124	75	132 75	68 70	.....	10⅜	33½
March	†166	40 05	1,973	75	123 30	83 25	.....	11¼	50⅛

*2 cockerels fed. †9 cockerels fed.

HORTICULTURE

Seasonal conditions at the outset of the spring of 1919 were quite promising for horticultural crops. For a brief interval in the early weeks of spring there was a spell of fine weather which gave every promise of an exceptional season; this lasted until June 28 and 29, when a very severe frost occurred which cut off potatoes, tomatoes and many of the other tender varieties of garden crops. It should be noted here, that some localities were affected more severely than others.

ORCHARDS

Cultural Apple Orchard.—Work was begun in this orchard early in the month of April, pruning and the removal of the paper protectors, etc., in preparation for the other operations.

The replacing of the trees killed during the winter of 1917-18 was carried out to quite a degree, especially in the case of McIntosh, Fameuse, Scott Winter, Duchess, Wealthy, Alexander, Wolf River, Yellow Transparent, Dudley, Langford Beauty and Crimson Beauty.

It was considered to be worth trying to establish the better varieties of fruit trees once more and then if they killed out, some other policy could be adopted with regard to the planting of the orchard with varieties that would be hardier.

However, it was thought advisable to discard two of the varieties entirely, Blue Permain and Bethel, because of the heavy losses sustained since the orchard was first planted out. These two have been replaced with McMahon White and Patten Duchess.

From indications it seems that another variety will have to be discarded, that is Milwaukee, on account of the large percentage of the trees that have been killed.

Variety Apple Orchard.—There is a much better appearing lot of trees in this orchard than in the cultural, generally speaking, although in some parts of the orchard where the land is so wet, it has been found that a very hard impervious subsoil exists, and the trees clearly show this area by their lack of vigour.

A very fine lot of trees are to be found on the hillside sloping to the north and another lot quite as vigorous at the extreme southeast corner of the orchard site. A set of under-drains has rendered the conditions somewhat better in this corner. This is very noticeable in the size and vigour of the trees.

The trees in both of the apple orchards ripened their wood in good time this year to withstand severe weather.

Plums.—The plums wintered well last year and many of them fruited. Of course the crop was small but some very good fruit was taken from the standard trees; of these Weaver and Omaha did the best.

Some of the seedling trees produced small crops; of these the following seemed to be outstanding: Gloria Seedling, O-436; Oren Seedling, O-423; Caro Seedling, O-419; Hawkeye Seedling, O-417.

Cherries and Pears.—The cherries and pears did better this season than in former years, but there is yet much to be hoped for so far as the development of the trees is concerned.

Grapes.—This part of the division did even poorer than any year past, which was due to a very large measure to the late frost which occurred June 28 and 29. At this time serious damage was done to the vines.

Raspberries.—A very good crop of fruit was harvested from some of the varieties this year.

It should be understood that in no wise are any of the canes layered in the fall of the year, this method of handling shows the hardiness of the varieties to good advantage.

King has proved the leader in hardiness and yielding ability, of course the fruit may not be quite as firm for shipping as Herbert, but there is plenty of quality in this variety to recommend it for growing in this district, when hardiness is such an important feature to be borne in mind.

Brighton, Count and Sarah follow next in order as to hardiness and yielding ability.

Currants.—There was a small crop from the bushes this season, but the quality of the fruit was very good.

Black.—Saunders, Kerry, Climax and Buddenburg.

Red.—Red Grape, Lees Prolific and Victoria.

White.—Cherry, Grape and Large White.

All the foregoing varieties are in order of merit.

Gooseberries.—The crop from this class of fruit was small again this year but the bushes are becoming well established.

Strawberries.—A very good crop of strawberries was obtained from the plantation and good prices obtained throughout the entire season.

The following varieties are recommended for this district: Senator Dunlap, Glen Mary, Parsons Beauty, Buster, Howard No. 41, Portia (Seedling) and Valeria.

The last mentioned seedlings, especially Portia, are of exceptional merit. The large, uniform, bright, firm fruit borne very uprightly on strong stems are some of the features of the variety, along with its ability to yield over a very long season, with fruit of good quality to the last pick.

Propagation.—Currant cuttings of several of the best varieties were made and planted out in nursery rows, to have them ready for distribution.

The cuttings did not take as well as desired, but there are quite a lot of very good young bushes on hand.

Caragana, Honeysuckle, Lilac and Japanese Quince, were started from seed.

VEGETABLE GARDEN

This branch of the work involved the expenditure of considerable time, especially in connection with the hotbed work.

In connection with the cultural and variety test work, very satisfactory results were obtained.

The following cultural experiments were carried on:—

Thinning of beets, carrots, parsnips and onions; successive crop tests with peas and beans; training of tomatoes to stakes and wires; control of brown streak in potatoes and actual yield of one healthy tuber; yields from the planting of whole small potatoes, sets with one eye, two eyes and three eyes; control of the cabbage root maggot; different methods of celery blanching.

The testing of the different varieties of vegetables was carried on as usual. Cabbage, cauliflower, carrots, beets, onions, parsnips, salsify, tomatoes, peppers, peas, beans, radish, lettuce, spinach, kale, kohl rabi, melons, cucumbers, citron, corn, pumpkins and egg plants, were all under test, in addition to some of the seasoning herbs.

Garden beet, cabbage, parsnip, carrot, radish seed and Malcolm corn were grown this year, with quite good success. This seed is being kept for seed distribution.

ORNAMENTAL GROUNDS

The borders, both perennial and shrub, were very attractive this past season. All the hedges made splendid growth and were much admired by the numerous visitors. To make the space occupied by the hedges more attractive, grass was sown and long narrow flower beds cut between each of the hedge rows. One variety of perennial flowers was planted in each of these narrow beds. The effect was very pleasing.

It has been found that the early spring flowers attract very much attention, even the scant variety which we had last spring brought very many people to the garden. Tulips of the early doubles, singles, late singles, Darwins, daffodils and a few snowdrops comprised the collection.

In the annual flower garden there was quite a profusion of bloom from the middle of July until the frost came.

A small quantity of seed from some of the best perennial flowers was saved for distribution to people desirous of securing these varieties.

SEED DISTRIBUTION

The distribution of garden seeds was limited to the minimum last spring; seed was sent only to those who made a special request to the office. During former years a notice was inserted in the local papers announcing the seed distribution. The demand was very great and the supply of seed barely met the demand.

It was discovered that the seed grown here gave very satisfactory results, and we feel that continuance of this distribution work would not attain the object sought, viz., the growing of garden seeds at home. Many of the people would feel that if it was possible to secure seed from the Station, there would be no need of growing seed at home. The general distribution was discontinued, therefore, on these grounds.

Potatoes.—Distribution of seed potatoes was conducted from this Station again last spring, and over five hundred three-pound bags were sent out. Four varieties were used, Irish Cobbler, Early Ohio, Green Mountain, and Rose of the North.

FIELD HUSBANDRY

Rotations.—Very little work has yet been taken up in this division outside of the regular field husbandry work of the Farm in general. The general rotation followed is a four years' rotation consisting of hoed crops the first year such as roots, potatoes and corn; second year, sown to grain and seeded with 10 pounds of clover and 10 pounds of timothy per acre; third year, two crops of clover, the second crop being used for seed purposes or put into the silo; fourth year, hay.

Crop Yields.—The crop of hay harvested the past season, amounting to 280 tons, was one of the best ever produced at this Station. The clover predominated very strongly in the first year's crop and gave a very good yield. The first cutting was commenced June 20 and a large amount of the second cutting was put into silos.

The cereal crop consisted of 60 acres of oats which yielded 46 bushels per acre. Two acres of wheat yielded 19 bushels per acre. Twenty-six acres were planted to Indian corn for silage. There was a mixture of sunflowers added to part of this crop which increased considerably the tonnage of the same.

FORAGE CROPS

Roots.—Twenty-two varieties of swedes were tested, Ewing's Conqueror Green Top giving the highest yield and Ewing's Universal the lowest yield.

Thirty-one varieties of mangels were tested, Steele Brigg's Giant Half Sugar Rose giving the highest yield and Steele Brigg's Prize Mammoth the lowest.

Thirteen varieties of silage corn were under test; the dent variety giving the highest yield was White Cap Yellow Dent with Wisconsin 7 next. Longfellow was first and North Dakota second in the flint varieties.

Sunflowers were also sown for silage purposes which gave a yield of 16 tons 1,461 pounds per acre. Japanese Millet yielded 12 tons 210 pounds per acre, and oats and vetches yielded 7 tons 388 pounds per acre.

FARM IMPROVEMENTS

Road Work.—The Farm road above the Ascot Consolidated School running from the northeast corner of the Station to the southeast corner has been completed. This road is used by the school vans to convey scholars from two districts to this Consolidated School which shortens the distance about two miles.

Four hundred and eighty loads of gravel were used to surface the roads running through the Farm. A light application of gravel is added every two years. These roads are dragged at different intervals throughout the summer months in order to

keep them in good condition. The drag is one of the best road making machines if used often and at the proper time after a rain.

Fences.—Three hundred and fifty rods of wire fencing was erected the past season, also two hundred and twenty-five rods of rail fencing.

Drainage.—Thirty-two thousand five hundred feet of tile was laid during the summer of 1919 as follows: 15,000 feet of 3-inch, 8,000 feet of 4-inch, and 9,500 feet of 6-inch tile.

There was also one hundred rods of open ditch dug.

Clearing Land.—Seven acres of new land was stumped and rocks taken out and field ploughed, which will be an acquisition to the cultivated area.

Buildings.—There was built the past season a sheep barn 30 by 75 feet with a side addition for feed room and lambing pens 16 by 16 feet. This building is divided into five pens with yard run for each pen. This has added much to the convenience of handling our flock.

There was also built one permanent poultry house 16 by 32 feet for the accommodation of 100 hens and also three colony houses. Other necessary repairs were done on other buildings.

MEETINGS

There was held on the 14th of August the fifth annual Farmers' Day gathering at this Station which was very well attended by people from all parts of the district who took much interest in the different lines of work, such as live stock, field husbandry, horticulture and poultry, etc., Addresses were given by the Hon. Dr. Tolmie, Federal Minister of Agriculture: Dr. Grisdale, Deputy Minister of Agriculture; Mr. A. T. Charron, of the Provincial Department of Agriculture; Mr. Crepeau; Mr. Ritchie, Assistant to the Superintendent; Miss Chute, of the Domestic Science Branch of Macdonald College, and others.

Mr. T. F. Ritchie, Assistant to the Superintendent, and Mr. Lang, of the Poultry Division, held meetings throughout the winter months in different districts.

EXHIBITIONS

This Station had an exhibit at the Great Eastern Exhibition at Sherbrooke, occupying a space of 12 by 50 feet in which was arranged models of buildings, cereals, roots, seeds, sheaves of grain and grasses, vegetables and flowers. There was also an attractive poultry exhibit comprising day-old chicks, water fowls and equipment for poultry work. This exhibit was in charge of Mr. Ritchie, assistant Superintendent, Mr. Lang, of the Poultry Division, and Mr. Lemyre, of the Horticultural Division.

The Farm also had an exhibit at the Brome County Fair, which is a fair of three days' duration, and also at the Ste. Scholastique Fair in the county of Two Mountains.

VISITORS

We are pleased to say that the visitors at this Station show a marked increase from year to year and much interest is shown in the horticultural, poultry and live stock work.

EXPERIMENTAL STATION, LA FERME, QUE.

REPORT OF THE FOREMAN-MANAGER, PASCAL FORTIER, B.S.A.

THE SEASON

April of 1919, although rather cold, was very pleasant and the warmth of the following month favoured seeding operations. Rain fell in sufficient quantity to permit of a uniform germination. However, the drouth of June injured all crops and rain in July, August, and September made harvesting operations and fall ploughing and seeding difficult. From October, 1919, to April, 1920, the weather was comparatively favourable for this district. It is interesting to note that during 1919 there was no frost from June 28 to September 10, but just before the former date severe frosts completely destroyed the Indian corn and beans and damaged the potatoes. It is altogether probable that the late spring frosts and early winter frosts will become less frequent as the land is more and more cleared.

METEOROLOGICAL RECORD, 1919-20

Month	Temperature F.			Precipitation			Sunshine hours
	Mean	Highest	Lowest	Rainfall	Snowfall	Total	
	°	°	°	Inches	Inches	Inches	
April	28·86	68	−13	2·16	8·00	2·96	.....
May	49	89	17	3·62	.....	3·62	
June	65·15	94	27	1·43	.....	1·43	308·2
July	65·5	94	34	4·14	.....	4·14	241·9
August	59·2	83	40	5·67	.....	5·67	137·1
September	48·3	72	30	5·15	.....	5·15	90·7
October	35·12	63	14	2·96	.....	2·96	45·8
November	21·1	44	−23	1·69	6·00	2·29	
December	−0·47	27	−40	.....	39·00	3·9	
1920							
January	−9·62	26	−48	.....	19	1·9	
February	3·79	27	−41	.....	.....	.....	
March	15·74	58	−29	.....	.....	.....	

LIVE STOCK

Horses.—There are at present on hand ten heavy work horses and two light drivers. The work horses have been employed in clearing and general farm work. For feed they have cost an average of 67 cents per day per head, the high cost being due to the fact that considerable roughage had to be purchased from distant points.

Cattle.—On March 31 the herd was made up of three grade Ayrshire cows, one grade Holstein cow, one Ayrshire bull, 3 grade Ayrshire calves and one grade Holstein calf. From the first of April, 1919, to March 31, 1920, the milch cows gave 30,468 pounds of milk and cost $664.92 for feed. The milk yielded a revenue of $2.18 per hundred pounds and the cows cost 31 cents per head per day. No experimental work has yet been carried on with the dairy cattle.

Swine.—On March 31 there were on hand four sows, one boar and 32 swine of different ages, the latter being fattened for sale. The breed kept is the Yorkshire. During the year careful figures of the cost of fattening 12 pigs bought October 26, 1918, were kept. On April 10, 1919, they weighed 970 pounds and on the 9th of

August, 1,873 pounds, or a gain of 903 pounds in all, or 75 pounds per head. On the last-named date they had cost for feed $279.69 and they were sold at 15 cents per pound. This return is very satisfactory when one remembers the high cost of feeds and the rather unsatisfactory temporary quarters in which they were kept. It is hoped to build a modern piggery in the course of the year 1920.

HORTICULTURE

The season was very good for garden crops, with the exception of corn, tomatoes and beans, which were injured by frost early in June. Very good crops were gathered of peas, lettuce, cabbage and carrots.

The growth of the apple trees was considerably kept back by the frosts of spring. The raspberries and strawberries were also damaged by frost. Gooseberries gave good results.

Flowers bloomed very freely; until the end of September one might see flowers in bloom which are generally confined to the milder regions. These included dahlia, phlox and China asters. With the exception of the maples, which were winter killed, the elms, poplar, oak and ash trees sent here by the Central Experimental Farm and by the Quebec Department of Agriculture grew very well in the nursery.

FARM IMPROVEMENTS

A boarding house large enough to accommodate 35 men and with all necessary conveniences was built during the year. Two cottages were also put up, one for the assistant to the superintendent and the other for the farm foreman. These buildings will be a great assistance in obtaining the necessary supply of farm labour. Part of the old barn built by the Militia Department was remodelled into a stable. A considerable amount of road-work was done and it is hoped next year a road will be finished from the Station to the railway station. About two miles of fencing was put up and a considerable amount of stone removed and surface drainage done. Plans were also prepared for the underdrainage of the Farm, which it is hoped be taken up next year.

EXPERIMENTAL STATION, KAPUSKASING, ONTARIO

REPORT OF THE FOREMAN-MANAGER, SMITH BALLANTYNE

WEATHER CONDITIONS

The spring of 1919 opened very early and was more favourable for work on the land than any spring since the opening of this Station. Seeding was commenced May 17, and extreme heat, and light rains following seeding were responsible for a quick germination of all seeds. The growth was very rapid during the first part of June, but owing to a severe and lengthy spell of drought during the latter part of June and during the month of July serious damage was done to crops, especially to the root crop.

During the months of August, September and October heavy rains did considerable damage to crops, and greatly retarded the progress of harvesting and fall ploughing.

Winter weather set in early in November and during the months of December, January, February and March very low temperatures with heavy snowfalls were recorded.

FIELD HUSBANDRY

Both spring and fall wheat did remarkably well despite adverse weather conditions; fall wheat harvested July 26 yielded thirty bushels per acre.

Four varieties of spring wheat were sown, Marquis, Prelude, Huron and Ruby, all of which matured. Ruby wheat matured in sixty-nine days and threshed twenty-six bushels per acre. The other varieties matured, but as they were much later than Ruby wheat they were spoiled in the stook by wet weather during the latter part of August.

Potatoes, mangels, turnips, corn and sunflowers made a remarkable showing, the yield from potatoes, turnips and sunflowers being exceptionally good.

Great damage was done to the mangel crop by cut-worms. From a two-acre plot of mangels, one-quarter alone was harvested, the remainder being entirely destroyed by cut-worms.

The hay crop on the average was a light one, but of excellent quality and it was harvested in first-class condition.

A good crop of second-growth clover was harvested which was stored in the silo for ensilage.

Fall wheat sown in the fall of 1919 looked in good condition when winter set in, yet, owing to heavy winds during the winter the snow did not cover this crop as well as wished for, and quite a large area will be winter-killed.

METEOROLOGICAL RECORDS

Months	Temperature Fahrenheit.				Precipitation			Sunshine
	Maximum		Minimum		Rainfall	Snowfall	Total	
1919	Date	Degrees.	Date	Degrees.	Inches	Inches	Inches	Hours
April	21	65	1	−12	2·54	5·00	3·04	169·4
May	28	90	9	20	2·04	1·00	2·14	255·6
June	18	92	28	30	0·23	.....	0·23	317·2
July	19	92	7	33	4·08	.....	4·08	235·6
August	20	84	8	36	8·00	.....	8·00	152·0
September	3	85	26	28	10·06	.....	10·06	95·6
October	5	70	27	12	4·00	3·00	4·30	67·9
November	11	47	19	4	.....	20·00	2·00	43·8
December	23	35	18	−40	.....	16·00	1·60	74·9
1920								
January	7	30	24	−52	.....	6·50	0·65	No record
February	8	31	27	−38	.....	2·00	0·20	113·8
March	23	62	14	−39	1·00	7·00	1·70	144·6
Totals	.....	.....	.....	.....	31·95	60·50	38·00	1,670·4

HORTICULTURE

In the main the results from the different branches of this department were highly satisfactory, small fruits and vegetables as well as all classes of flowers and shrubs made an excellent showing.

Tomatoes, pumpkin, squash, peas and beans were successfully grown in the open, fine yields being obtained from each variety mentioned.

Currants, raspberries and strawberries did well, the results from all being satisfactory.

A start was made in connection with the planting of hedges around the superintendent's residence, and the completion of this work will be carried on during the coming summer.

BEES

Two colonies were supplied this Station from the Central Experimental Farm, Ottawa, in September, 1919, which were kept in the open until October 20. On this date they were transferred to winter quarters in the cellar of the superintendent's house. The winter being very severe great difficulty was found in keeping an even temperature in the room provided for the bees, which resulted in the loss of a considerable number. However, both colonies seem to be strong, and a good result is expected from them during the coming season, as this section of the country seems to be well suited for bee-keeping. This branch is considered important in a new country such as this, as the working of bees will without doubt greatly assist plant life and the growing of clovers.

ANIMAL HUSBANDRY

Horses.—Sixteen horses of heavy draught type are kept at this Station. During the winter months these horses are employed for the most part in hauling of logs and pulpwood taken from land clearing operations, as well as keeping the Station supplied with firewood.

By working the teams alternately it is found that they keep in good condition and are in first-class condition for spring work which at this Station is very hard on horses owing to the amount of new land that is being worked. The breaking of virgin soil by team-power calls for both strength and endurance in horseflesh.

Dairy Herd.—The dairy herd at this Station at the present time numbers thirty head made up as follows: Four mature grade Holstein cows, eight mature grade Ayrshire cows, three two-year-old Ayrshire heifers, eight yearling Ayrshire heifers, and six Ayrshire calves. Springbank King Theodore 2nd heads the herd.

As the above herd increases in number it is the intention of the management to weed out and build up a district herd of Ayrshire cattle, selecting the stock from the best producers as shown by the records of performance and production that are being kept.

Beef Cattle.—Thirty-four head of Shorthorn stock comprise this herd, nineteen grade Shorthorn cows and fourteen calves with ages ranging from three to ten months.

Kentville Marconi, a registered Shorthorn bull received from Experimental Station, Kentville, N.S., heads this herd.

All Shorthorn calves are allowed to run with their mothers, and at present we have a bunch of calves from which we hope to establish an excellent type of beef cattle.

Sheep.—A pure-bred flock of Shropshire sheep is kept at this Station, the foundation flock being supplied by the Central Experimental Farm, Ottawa.

Results during the year ending March 31, 1920, were not satisfactory, as out of a total of nineteen lambs dropped from twelve ewes, seven lambs only were saved. The lambs when dropped were weak and a large percentage affected with goitre. Lack of proper housing, as well as insufficient exercise were responsible for these conditions. During the month of July, 1919, the flock was attacked by dogs, and three fine ewes and four lambs were killed.

During the winter of 1920 different methods of feeding and exercising were used, as well as providing better shelter. The result during the present spring is highly satisfactory, eighteen lambs of the finest type being dropped by eight ewes.

The ram lambs will be sold to settlers in this district during the coming fall months. The settlers have manifested great interest in sheep.

Swine.—Nine registered Yorkshire sows and one registered Yorkshire boar comprise this herd.

Five young sows supplied by the Central Experimental Farm, Ottawa, were bred for the first time at this Station, and farrowed in May, 1919. Seventy-one young swine was the result and of this number fifty-two were successfully raised.

Four young sows were kept from the above litter for breeding purposes; these together with the five mature sows are expected to farrow during the coming summer.

A ready market is found for all young pigs, the settlers of this district being anxious to procure good stock.

IMPROVEMENTS

Land Clearing.—One hundred and four acres were cleared of standing timber during the past winter, from which 559,374 cords of pulpwood, 12,264 feet of Balm of Gilead, 4,159 feet of spruce, and 75,789 feet of poplar were taken, all of which was marketed at a profit over and above all expenses. This work provided employment both for men and teams during the winter months, as well as clearing a valuable tract of farm land.

Roads.—One mile of new road was graded during the year, this work being done for the most part by a machine grader.

Breaking New Land.—Eighty acres of new land were summer-fallowed, fifty acres of which were sown in fall wheat.

Considerable difficulty has been experienced here in getting a plough suitable for this work. Several different makes have been tried. During the fall of 1919 a 16-inch Manitoba brush-breaker plough with forecarriage was used, this plough gave excellent satisfaction. The forecarriage attachment overcomes the difficulty experienced with ordinary ploughs when ploughing mossy land.

Drainage.—During the summer of 1919, 3,837 feet of open drains and 10,393 feet of tile drain were dug. This drainage was done in order to drain a number of wet areas on the farm property and thus enable the areas drained to be earlier cultivated.

During the winter a Buckeye traction ditcher was purchased, and the drainage of this Station's property will be conducted on a larger scale during the coming season.

NEW BUILDINGS

Farm Boarding House.—The foundation for this building was put in during the fall of 1918, the building being completed in 1919. This building is first-class in every respect and provides excellent accommodation for farm help.

Implement Shed.—This building was constructed during the summer and fall of 1919, and proves a valuable acquisition to the Station. The ground floor of this building is used for storing implements and machines, as well as affording ample room for a blacksmith shop and tool-room. The upper floor is used for a carpenter shop, store room for grain, feed grinding, etc.

Dairy Building.—A combined dairy and ice-house was constructed, which is being equipped with a power churn and separator. A 10-horsepower boiler has been installed which will furnish heat for the building and steam for sterilizing purposes.

Root House.—This building was constructed late in the fall of 1919. The main part of this building is underground. Cedar planks placed perpendicularly were used in the construction of the walls. The roof also was made of cedar and covered with straw and earth.

Painting.—All farm buildings including those constructed during the year were thoroughly painted, which added much to the general appearance of the Station's property.

EXPERIMENTAL STATION, MORDEN, MAN.

REPORT OF THE SUPERINTENDENT, E. M. STRAIGHT, B.S.A.

THE SEASON

The winter of 1918 and 1919 was exceedingly mild, and the snow not deep at any time. In fact the precipitation, including snow, amounted only to a few inches. The fields were practically bare all winter, and the temperatures much above normal, except for a few brief periods.

The spring, however, was not early. What snow there was remained until late season, and then the snowfall was the equal of any storm during the winter. Early working of the land at the Experimental Station was out of the question, for the soil remained cold and sodden. During May the weather improved, but there was still some snowfall. There were no terrific gales such as were experienced in former years, and therefore, the damage from soil blowing, so destructive in this country, was not great during 1919.

As the season advanced the heat became intense but fluctuations of temperature were not so great as noted the season before. Even the nights were warm, so that tropical plants, such as melons, did well in the open and ripened before killing frost. Southern Manitoba last season might almost be regarded as being in the corn belt, for many varieties planted late, matured in good time. The heat continued throughout the season no killing frosts being recorded until the 29th of September. Shortly after this we went directly into winter. There was no autumn. The result all through southern Manitoba was disastrous to many farmers. Potatoes remained undug, and such root crops as were grown in the province in many cases remained in the ground. Blizzards were frequent in October and November, and the mercury dropped below zero on many occasions, and as low as seventeen below in November. Practically all of the crops at the Experimental Station were harvested, but under some difficulty. A few turnips and mangels remained in the ground.

The winter of 1920 was severe and constant. Even at the end of our fiscal year, March 31, the winter lingered. The snowfall was particularly heavy. Despite this, the ground was frozen to a great depth.

From casual observation it would seem that considerable damage had been done our young trees in the orchard and nursery. Since one block of orchard trees, seven feet or thereabouts, was absolutely covered, root and branch by snow, the effect of this winter covering will be observed with interest, as well as the effect of the added moisture from the melting snow.

METEOROLOGICAL RECORDS

Month	Temperature		Precipitation	
	Maximum	Minimum	Rainfall	Snowfall
1919	°	°	Inches	Inches
April	71	17·5	0·2	6
May	99·5	20	1·90	.....
June	90	31	5·92	.....
July	97·5	46	3·95	.....
August	99·5	37·5	2·12	.....
September	86	28	2·03	.....
October	81	zero	0·115	11⅛
November	47	−19	.....	13
December	40	−27	.....	3½
January	31	−34	.....	17¾
February	34·5	−27	.....	9
March	50	−17	0·09	14¼
Total	.....	.....	15·515	74⅜

LIVE STOCK

Horses.—The horses at the Experimental Station, Morden, at present numbering eight, consist of seven work-horses and one driver. Of the work-horses, five are mares and two are geldings. A four-horse team of the heavier type is used for field work such as ploughing, seeding, etc., while the other three, which are of a lighter draught, are kept for work in the garden and orchards.

All the horses have been kept in excellent working condition throughout the season. Only feeds which have been grown on the Farm have been fed. These feeds consist of whole oats, oat sheaves, and a mixture of western rye grass, timothy and clover. On such feeds the horses at the Station have thrived, worked practically every day, withstood the extreme heat of the past season, and are entering the winter in splendid condition. An outstanding point of interest so far as our horses are concerned has been the well groomed, thrifty condition in which they have been kept throughout the season.

Little in the past has been done in an experimental way with horses at this Station. We are, however, undertaking feeding experiments to ascertain the most profitable way of wintering idle and work horses.

Cattle.—Two Ayrshire cows were purchased in November, 1919, having in mind the making of them the foundation of our future dairy herd. These cows have never been entered in the Record of Performance so that it is difficult to say what may be done with them, but we have great hope that they may prove themselves worthy. Beauty of Elm View No. 32281, sired by Sir Oliver, bred by Donald Cummings, Lancaster, Ont., and Greenbank Lottie 2nd No. 29996, sired by Barcheskie King's Own (Imp.), bred by William Hay, Howick, Que. Mr. Norbury, from whom the cows were purchased, has already seen the influence of these cows in the improved stock in his own town and in the surrounding country.

Steers.—Thirty steers were purchased in the fall of 1918, and sold at the end of a period of one hundred and eighty-two days. Fourteen were kept in an open outside shed, and sixteen were kept inside divided into two pens. The object of our work was to determine the effect of an excess feeding of roots in early season, as well as to compare outside and inside feeding. The results of the experiment during this year and past years would show that inside feeding has every advantage in a province like Manitoba. Those fed outside suffer much from the cold under the open conditions which obtain at the Experimental Station. It is possible that where barn room is not available, some profit may be found in outside feeding, but our observations would lead us to think that much of their food is used up in keeping the animals warm. The less expensive plant, necessary for outside feeding, may offset in some measure the lesser gain which is constant with the years.

—	Pen 1 inside	Pen 2 inside	Pen 3 outside
	$	$	$
Average cost per steer	89·22	89·22	89·22
Average cost feed per steer	46·08	45·9	41·76
Average selling price per steer	184·12	168·92	177·31
Average profit per steer	48·82	33·8	40·61

Pen 1 was fed an excess amount of roots in the early season. It was something of a surprise when we found that the eight steers so fed had gained six hundred pounds between December 4 and January 1. This was decidedly better than either of the other two, and besides that, the condition into which the animals were put to receive the concentrates, was noteworthy, for they maintained their gain until

the end of the feeding period. Our work with steers has shown that steers can be fed with profit, and that they can be put on the market in a finished condition. This finishing, despite the extra work, was found always necessary with experimental feeding.

Sheep.—Our grading up experiment with sheep has been continued as before. The past summer, with its excessive heat, has been particularly trying to all sheep on the range. However, our flock is taking on the character of the Hampshire more and more as time goes by. The type of original ewes, which was probably as poor as could be found anywhere, will very soon be entirely eliminated. 742 pounds of wool at fifty cents per pound were sold from our flock of 82. This, in view of the fact that about twenty of them were lambs, shows that the fleece is increasing in weight as well as in quality.

Some attempt was made to put lambs on the market at Easter. Six were sold on April 14. They weighed 380 pounds, and sold at twenty-four cents per pound. It will be noted that these lambs brought at that time over $15 each, on an average; one brought over $20. The lambs were born in the latter part of January and February, and show conclusively that winter lambs, where at all possible, pay as at no other time. The present flock consists of 82, and the total sales from the flock during the year has amounted to $1,031.56. This has been made up of wool, lambs and cull sheep, the latter being replaced by our better lambs.

An experiment to determine the relative value of pea and bean straw as compared with alfalfa hay for lamb feed was conducted for a period of four weeks during October and November, 1919. The lambs were divided into two lots of eight lambs each, and Pen. 1 was fed oats, bran and roots in addition to the alfalfa hay. Pen 2 was fed a similar ration with bean straw instead of alfalfa. At the start the lambs gained more rapidly on the alfalfa, but at the end of the experiment those fed the straw were gaining as rapidly as the others, while the cost of production was much lower with the bean straw than with the alfalfa. This was an interesting bit of work in view of the fact that ordinarily the pea and bean straw would be regarded as a by-product of no value. All of this may be set forth in the following table:—

	Pen 1.—Alfalfa	Pen 2.—Bean Straw
First cost of wethers at 9½ cents per pound	65.83	67.54
Total cost of feed	17.77	12.85
Total cost	83.60	80.39
Sale of wethers at end of 28 days	91.96	90.20
Profit over feed	8.36	9.81

During the summer of 1919 all spring lambs in the vicinity of Morden suffered considerably from stomach worms. Many farmers in the district lost practically all they had. One farmer, who had possibly the largest flock in the country, lost lambs at the rate of five and six a day until all had died. Stomach worms in lambs seem especially hard to control. The best treatment known to veterinary science seemed of little avail in this particular instance. The lambs on the Station Farm were also attacked. Two were lost from this cause, and a post-mortem examination revealed the presence of stomach worms *(Strongylus Contortus)* in very large numbers, and tape-worms *(Taenia Expansa)* in medium numbers. It was evident from the appearance of the lambs that many were more or less affected, and quick action was deemed necessary. The remedy followed was to starve the lambs for twenty-four hours and a drench, made up as follows, administered: 1 tablespoonful of gasoline, 5 to 6 ounces of fresh cow's milk, 1 tablespoonful of raw linseed oil; thoroughly mixed. It was not found necessary to repeat the dose, as after the first all the lambs became much more active and brighter in appearance. No more lambs were lost after the dose had been administered.

POULTRY

No poultry has been kept at the Station so far, but we hope to make the poultry industry one of our leading lines. We believe that poultry can be made a profitable industry in Manitoba. Certainly there is no line of work which needs to be emphasized more than how to obtain eggs in winter. With the advent of winter, hens cease to lay, and the purchase of fresh eggs becomes impossible. Such conditions are not necessary or profitable. Poultry work fits into the general scheme of orcharding which is one of our leading lines at the Station.

BEES

No bees are kept at the Farm at present, but this has been owing to the fact that there was no place where they might be wintered. An attempt to winter outdoors was not successful, owing to the severe winters. For the coming years the basement of the Superintendent's house will be available for the purpose, which we believe would be an admirable place for their winter keep. We hope to purchase a number of colonies during the coming season. The effect of the honey bee in the orchard and garden is always noticeable, and especially so in Manitoba.

FIELD HUSBANDRY

The sixty-acre wheat field of the year before was seeded to western rye grass, timothy and clover. The ten acres seeded to timothy and clover was a most excellent crop for this country, despite the fact that these crops have not done well in the Morden district. The yield from this part of the field was about two and one-half tons to the acre, while the western rye grass yielded not more than two tons. However, the entire field was an excellent crop for the season, providing more hay than we could feed on the Farm.

A block of the western rye grass was cut with the binder and threshed. The yield of seed per acre, which was sold at $14 per one hundred pounds, gave us considerably more dollars per acre than the hay was worth. Besides that the hay had considerable value as such. From the thirteen and one-half acres so handled 5,700 pounds of clean seed were secured. This was sold at 14 cents per pound, making a total return of $798, or $59.11 to the acre. If the thirteen and one-half acres had been cut for hay, as was the rest of the field, and sold as such, it would have returned $540, or $40 to the acre, the hay selling at $20 per ton. Saving this thirteen and one-half acres for seed, however, resulted in a gain of $19.11 per acre over the hay, and the straw in addition made valuable feed.

No special machinery was used in any way in handling the western rye grass for seed. It was threshed with the Sawyer-Massey separator by slowing down the machine, feeding slowly, and allowing the grain to come out of the grain auger shaft instead of allowing it to be elevated. In cleaning the seed the ordinary grain fanning-mill was used without any special sieves.

The oat and barley crop with us was rather a poor one. The oats did fairly well, and furnished us with sufficient oats for feeding, but the barley crop was almost a failure. The fifteen acres of corn did well, and was harvested much before killing frosts. The corn at that time was quite ready for the silo. Another forty-acre field was in summer-fallow, and on this our corn will be planted next year.

A large number of varieties of corn were planted, and records taken on same. Owing to backward season these test plots were not planted so early as we should have liked, but the season later on was favourable for the ripening of corn. The North-western Dent fully matured, while Yellow Flint, Longfellow and North Dakota got beyond the glazed stage before frost. The Northwestern Dent is a corn having great

possibilities in this country. We propose next year undertaking some experimental work with the crossing of this corn with the so-called Squaw corn of the Northwest. This Squaw corn will keep on growing even though the nights are cold. There is some hope that this corn combined with the Northwestern Dent might be the solution of the corn problem for Manitoba.

About twenty acres of potatoes were grown at the Farm, but further mention of this will be made under Horticulture.

About one acre was planted to sunflowers to be used for ensilage. These were of the Mammoth Russian variety, and made excellent growth. They were carefully planted by hand in rows 2 feet apart, 2½ feet, 3 feet, and 4 feet, and thinned so that the stalks would stand about one foot apart in the row. The results of our experiment would indicate that they should not be planted closer than three feet apart. With rows closer than three feet much difficulty was experienced in cultivating the crop, and in harvesting same. The yield per acre with rows three feet apart seemed slightly greater than four, but from the whole plot it was fully double that of corn.

Since we have only one silo on the Farm, definite experimental work from the feeding standpoint is not easy. The sunflowers, however, were put in the silo with corn above and below, so that we should be able to determine in some measure the relative feeding value of the sunflowers.

All of our sunflowers at the Farm were more or less rusted last year. Probably twenty-five per cent of the leaves dried up before the harvest. It was also noticed that the closer the sunflowers were planted, the more rust was present, but the rust was found on all plots. The season previous to this, large quantities of sunflowers were planted for protection between our experimental vegetable plots, and even though they stood separate and apart from other rows of sunflowers, they suffered much from the rust. In fact some stalks broke down and were absolutely unfit for any purpose by the beginning of August. We believe that if the sunflower is to be used extensively as an ensilage crop in the West something must be done to control the rust. No doubt Bordeaux mixture would be of value, but from the standpoint of this crop the use of the mixture would never be practical.

HORTICULTURE

The entire area given to the horticultural department at the Experimental Station, consisting of about ninety acres, was occupied with horticultural crops in the season of 1919. It is true that some of these, such as potatoes and beans, might be regarded as field crops, yet they were planted and cared for by the horticultural department.

The soil for the most part is of a much heavier type than such crops demand, yet when properly cared for yields well in the normal season. Naturally this soil is especially rich in nitrogen, and of an alkaline nature, so that in seasons of heavy rainfall all crops take on a very succulent and leafy growth, not easily restrained. In the dry season, however, the reverse is noticeable. Crops on these soils are not the first to suffer, but in time of protracted drought the soil becomes absolutely dry, and growth ceases. This was especially noticeable in our potato fields during the present season. Though not diseased they died before they had nearly completed their growth.

The entire area has been especially weedy, not so much from so-called pernicious weeds of this province as from French weed. This French weed is particularly troublesome, and hard to get rid of. In fact it has given the writer as much concern as any weed with which he has had to do. Though an annual, the seeds, which have germinated in the autumn, live throughout the winter, and are quite ready in early spring to ripen a fresh crop of seeds before the usual spring cultivations. This makes the fight against French weed constant throughout the season. Though still abundant in many fields on the Farm, some progress is being made towards its extermination.

A considerable area of the horticultural department is still a bare prairie, yet some planting has been done. So far as the young orchards are concerned Caragana hedges and laurel-leaved willows have been planted—miles of these in fact—and though small for the most part, are growing with the trees, and providing some shelter. The willow hedges planted at the start in 1916 are growing rapidly and providing much shelter.

Large Fruits.—The orchard work was again extended during the season of 1919. About fifteen hundred trees were set in such a way as to connect up the blocks set in former years. This necessitated the removal of the old nursery, and the care of much larger plantations. The orchard will not be greatly extended but the work will consist of the replacement of such trees as die. The orchard is now taking on permanent form and though the hedges are decidedly small, the trees which are either seedlings or one-year grafted stuff, will receive considerable protection from the snow and rape.

During the season of 1919 one block was set using a white spruce as every second tree and each alternate row was so arranged that no two apple trees or evergreens would be opposite each other. The idea of this work was to determine the effect of the evergreens on the apple trees, chiefly from the standpoint of protection.

Another block was set, using four trees in place of one, with the trunks of these trees about three feet from each other. These trees will be grown in the bush form, with the hope that the four trees, branching from the ground, will furnish mutual protection to each other. All of this is in the experimental stage, and may or may not succeed. The greater part of this nursery material set in 1919 lived, and though the growth throughout the season was not great, yet with a favourable season, we expect them to do well. It has been noticed that trees coming from Ottawa not only start off better, but continue to grow better than those propagated in the West. We believe that the seasons in the West are so severe that the wood is injured in such a way that the young tree is not able to recover. Young trees obtained this past season from Portage, though looking well at the time of planting, had black hearts, and continued in a dead or dying condition throughout the season.

It has also been noticed that the trees growing on the south side of a hedge do not do so well as those growing on the north side. We believe that the future will show that the northern exposure for the apple orchard in this province is more suited to our conditions than the southern. If it is possible to retard the growth of the buds in the spring until fine weather becomes constant, then the tree has every prospect of developing normally. On the other hand, if the buds are forced by the heat on the south side of the hedge, there is great danger that they will perish during the next cold night.

A few plum trees, butternuts, pears, etc., obtained from various sources for experimental purposes, have been tried out. What future there may be for this material remains to be seen.

It was of great interest to the writer during the past season to note the few trees which were coming into bearing for the first time. These were crab-apples and some of the first and second crosses between standard apples and the Siberian crab.

A few plum trees bore one or more fruits of sufficient quality to warrant propagation. The Mammoth plum, although not an experiment with us, promises to do well on our Farm, and we are planting it in fairly large quantities. This Mammoth plum would do credit to orchards much farther east. Our seedlings of the Cheney plum are especially promising, and though they have not borne with us, many of them have blossomed, and should bear during the coming season. This seedling plum hedge is a rapid grower, and a thing of beauty. There is every prospect that among these seedling plums many will be sterile, but from examination we would conclude that many others should bear fruit.

Small Fruits.—The small fruit plantations have been again extended, and the raspberry was offered for sale in some quantity during the past season. Three varieties of raspberries continue to do well, namely, the Sunbeam, the Herbert and Minnetonka. These varieties suit our purpose better than others, and the future commercial planting on the Station Farm will be from these, unless something else is found in the meantime better than those we now have. Many of the commercial varieties in the East have no value in the West. The Cuthbert, for example, is not only killed at the tips, but dies, root and branch, during our most severe winters. The future for the raspberry in Manitoba is bright. The canes of all varieties should be turned down and covered with soil during many winters, and we recommend that it be done every year. The red spider is particularly troublesome during some of our hot and dry summers, but it is the only serious pest attacking the raspberry.

The red currant is also a small fruit of promise. Many varieties are hardy and yield well. For the past season we have had much difficulty with the currant fruit worm. This insect has been especially active all over the prairie. No effective means of control has been discovered. During the season of greatest attack the fruit falls rapidly, and a promising crop may be destroyed in a few days.

The gooseberry has not done well with us, and we do not expect it to do so. As the gooseberry is a cool weather crop, the high temperatures and dry conditions of Manitoba are not conducive to its best growth. The attack of aphis is also especially troublesome on gooseberries at certain seasons and continued attacks kill the plant in one or two seasons. Some of our oldest specimens have been killed outright, and others are dying. The currant has never produced at this Station in quantity sufficient to to pay for the trouble of growing it. The black currants grow well enough, but bear little fruit. For this berry, however, there is practically no demand.

A few of our strawberries get through the winter, but many varieties fail outright. We are attempting to extend our strawberry plantations, and are doing so as rapidly as we can secure the plants. The North Dakota—a cross between the Jesse and the Manitoba Wild—shows great tenacity, both in producing runners during the dry season, and in persisting during our hard winters. The fruit is not large, but the quality is most excellent. We also believe that the Senator Dunlap will eventually win out as a commercial sort on the prairie. The everbearing varieties have possibilities in the home garden, but are not heavy enough bearers to make them a paying proposition from the commercial standpoint. The everbearing sorts, however, are making many friends among the prairie farmers, for the unusual experience of picking strawberries in late season, right up to the frost and snow period, never fails to please.

Vegetables.—Considerable attention has been given to the vegetable work at the Farm. A garden of large area was planted in the spring of 1919. This included all of the standard vegetables and many others planted wholly for experimental purposes. For the most part these vegetables did well. Something more than a half-acre of onions was planted, and found ready sale at the Farm. These onions were practically all that were grown in the Morden district. The tomatoes ripened their fruit in early season, and in sufficient quantity to meet all demands. The cucumbers outdid themselves throughout the whole district. The quantity was so great that there was no demand. The melons were especially fine and an abundant crop. Southern Manitoba, with the promise of a season such as we had last year, might produce melons for export. Melons are grown by the Mennonite farmers throughout the whole of the reserve. This year the supply was greater than the demand.

The twenty acres of potatoes planted at the Farm did not yield as they did during the previous season. This large area was planted to two sorts, namely, the Irish Cobbler and the Early Ohio. These varieties are two which we constantly advocate as being well suited to the province. It is a noteworthy fact that in our test plots, although much below what we had expected, the Cobbler was a leader last summer. During a season of normal rainfall such results would not be possible, for the later

varieties continue to grow, but during a season such as this, the early maturing potatoes are the best yielders. The Green Mountain, a later variety, has much promise in the southern part of the province, and we are hoping to develop a strain early enough to suit our conditions. The quality of this variety is especially good. In fact the greater number of varieties this year are very fine.

About fifteen acres were planted to peas and beans during the year, but the yield from all was very much less than that of one year ago. All sorts of beans ripened in good season, however, so that there was not the same difficulty at time of harvest as formerly.

Only the earliest varieties of tomatoes are of much use in this province during the ordinary season. The Alacrity is one of the best that we have tried out, although not the heaviest bearer during the past season. Burbanks Early yielded 105 pounds 12 ounces, while the Alacrity A yielded 78 pounds 2 ounces, and Alacrity B, 36 pounds 8 ounces. The Earliana is perhaps the most popular variety on the prairie. Many of the standard sorts do not get beyond the green fruit stage. The Danish Export is another variety which has done well with us, but the fruit is small.

The Alacrity A was planted in larger quantities than any other variety, so that it was possible to attempt some experimental work from the cultural standpoint. One plot was pruned and tied to stakes and kept thoroughly away from the ground throughout the year, while another plot was permitted to grow without training. Experimental work carried on by the writer in the East with the Earliana, along the same line, would indicate that nothing was gained either in earliness, quality or yield by such staking and tying, but in Manitoba last season with the Alacrity A the reverse was proven. It will be noticed that the rows which were staked yielded 629 pounds as compared with 344 pounds from the rows which were not staked. Frankly speaking, these weights were a surprise as we expected a contrary result. It only emphasizes the fact that results obtained in one part of the country may or may not be true in another.

Flowers.—All of the standard annuals were tried, but the season was much less favourable for this work than formerly. Many varieties failed to germinate at all. Others remained in the ground all summer, and germinated only in the autumn. The California poppy, sweet alyssum, ten weeks' stock, phlox, verbena and calendula are among the best for prairie planting.

The bulbs do well in Manitoba. Owing to war conditions no tulips were planted, but these usually do well in the Morden districts. Gladioli made a good showing, and were planted in quantity. These bulbs, when gathered and stored this autumn were even superior to those planted last spring, and promise well for next year.

Many varieties of the hardy roses were planted, and were quite productive of bloom during the first season. No doubt many of these will not persist during the winter, but we hope that some will prove themselves hardy enough for this district.

The Canterbury Bell is another flower which has been greatly improved during the past few years, and we believe is quite hardy.

The great future for the prairie garden is with the perennial. The season is far too short for most annuals. The plant is scarcely well established before killed by frost, but the perennial not only makes rapid growth in the spring, but persists well on in the season. We hope to propagate the perennials in large quantities during succeeding years.

FARM IMPROVEMENTS

Buildings have not been pushed at the Experimental Station to the extent that they would have been, had the times been normal. So many buildings are necessary for the successful prosecution of the work that it has been difficult to know what should be asked for first.

The Superintendent's house was undertaken in rather late season for Manitoba but is at present near completion. This is a frame structure on cement foundation, and presents a rather pleasing appearance. When the painting, which we are now planning to do during the coming season is done, the place will, we think, have a very homelike appearance

A new horticultural shed was erected in the fall, and was found to be of much use while harvesting the horticultural products. Later in the season it was used as a storehouse for farm implements. An extension was also put on our sheep-house to permit the storage of feed.

We were also fortunate in obtaining an abundance of water in another field, which we hope to use for pasture next year. We have been very fortunate in obtaining water on this Farm. The well in question is only fifteen feet deep, but furnishes an abundance of water for all purposes. On an adjoining farm, after many attempts, the effort to obtain water has been given up. Many wells have, however, been dug on this farm several hundred feet deep, but without water.

The silo and implement shed constructed the summer before continue to be satisfactory. The Farm buildings are being painted a colonial yellow with a dark green trimming. We are following this colour scheme on all new buildings, and expect to make the old buildings conform to this scheme as soon as possible.

Roadmaking.—The back approach to the Farm has been gravelled for the entire distance and greatly improved. The permanent roadways to the Farm have not yet been laid out. It has been our intention to extend the main street of Morden village to the station and through our grounds. This was rendered impossible heretofore, owing to the fact that certain land, not belonging to the Farm, must needs be crossed. At the present writing we have been informed that the land has been purchased so that much attention will be given to the roads and drives next year.

Fences.—All fences on the Farm are in first-class condition. We have used woven wire and cedar posts, with a strand of barbed wire on top. This fence is practically all that could be desired. When the new field referred to above is taken over, no doubt changes in fences and the construction of others will need to be made.

EXCURSIONS AND VISITORS

The Annual Convention of the Great Plains Official Horticultural Association held one session in Morden, and the members spent some time in going over the Station. The Horticultural Society of Morden and Harmony Orchestra entertained the visitors at a banquet on the Farm. In conjunction with this all of the townspeople and others were invited to the Farm for a picnic. The weather was unfavourable, but a fair number spent the afternoon with us. Several demonstrations were put on, such as poultry culling, buttermaking, canning and judging of live stock. The sports were cancelled for the most part owing to the bad weather.

More interest was shown in our work during the past summer than before, if this interest may be judged by the number of visitors coming to the Station. These visitors have come from some distance. During the vegetable season visitors were so numerous for the purchase of vegetables, fruit, etc., that it was impossible to care for them at times. The revenue receipts for vegetables sold during the month of October was somewhat greater than $1,800.

The Superintendent spoke on our work at the Station at the Farmers' Week in Winnipeg, at the Convention held at the Farm and several times in the churches of Morden. The purchase of a motor car has made it possible for the Superintendent to visit some of the farmers in surrounding districts. The standing crop competition was carefully gone over. He was able also to assist the county agent and Extension Department in the judging of horticultural products at several exhibitions.

EXHIBITIONS

An exhibit was put on at a number of the fairs in southern Manitoba. Mr. E. S. Hayter, the assistant at the Station, was in charge of this work. We exhibited at Carman, Miami, Melita, Souris and Cartwright. An exhibit of horticultural products was shown at the Horticultural Fair at Morden, and though not as large as we had shown in the past, it was attractive and the products of good quality.

The work has been widening out with the years, and we hope before long to be fully equipped and outstanding as an Experimental Station.

EXPERIMENTAL FARM, BRANDON, MAN.

REPORT OF THE SUPERINTENDENT, W. C. McKILLICAN, B.S.A.

The crop season of 1919 started with a heavy rain the first week of April. This gave a good supply of moisture but delayed the work on the land. Farm operations began about April 20. Favourable weather for seeding prevailed from then on and the crop was sown in good time. A dry spell from early May till June 12 gave early crops somewhat of a setback and caused poor germination of roots and corn. Good rains fell during the middle and latter part of June which made crop prospects improve greatly and insured a good first cutting of alfalfa. The month of July was dry and exceptionally hot so that ripening was very rapid and the grain as a result did not fill very well. Rust made its appearance and did considerable damage in the district, though the Experimental Farm crop escaped with slight injury on account of its earliness. Harvesting and threshing were completed early.

The hot weather in July and August was favourable to the development of corn and the quality of the corn was the best in many years, being loaded with fine ears. A considerable quantity of ripe seed was harvested.

METEOROLOGICAL RECORDS FOR BRANDON, 1919-20

—	Temperature F.			Precipitation				Total sunshine
	Mean	Highest	Lowest	Rainfall	Snowfall	Total	Heaviest in 24 hours	
1919	°	°	°	Inches	Inches	Inches	Inches	Hours
April	37·07	70	10·8	1·43	1	1·53	1·12	173·5
May	55·7	95·7	11	1·60	.....	1·60	0·45	247·1
June	65·2	89·5	29	3·57	.....	3·57	1·34	228·7
July	66·8	95	41	2·14	.....	2·14	1·05	283·4
August	64·8	98	33	1·38	.....	1·38	0·71	250·6
September	52·7	85·5	24·4	1·62	.....	1·62	0·95	114·4
October	29·7	72	−11	0·72	12	0·84	0·72	145·9
November	12·8	42	−27·1	.....	8	0·80	0·60	109·4
December	−5·2	38	−35	.....	5	0·50	0·20	114·9
1920								
January	−6·9	30	−40	.....	17	1·70	0·80	88·3
February	3·0	33·7	−31	.....	3	0·30	.....	117·5
March	14·1	45	−24	.....	11	1·10	0·50	132·5
Total for year				12·46	57	17·08	.....	2,000·2
Average for 10 years				12·08	42·85	16·33	.....	1,962·3
Total for 6 growing months, April to September				11·74	1	11·84	.....	1,297·7
Average of 10 years for 6 growing months, April to September				13·15	5·7	13·72	.....	1,251·3

LIVE STOCK

Horses.—There are twenty-five horses on the Farm on March 31, 1920. Four of these are pure-bred Clydesdale mares and one grade Clydesdale brood mare. There are two pure-bred fillies rising two years old and three last year's colts, two of which are pure-bred. There are three driving and general-purpose horses and the remaining number, heavy working geldings, complete the list. Five mares were bred this year and four are in foal.

Cattle: Dual Purpose Shorthorn.—The breeding herd of sixty-one head is composed of two pure-bred Shorthorn bulls of dual purpose breeding, thirty milking cows, twenty-seven heifers and calves of pure-bred dual-purpose Shorthorn breeding and two grade cows of the same type. The best milk record completed during the year was 11,074 pounds of milk, testing 4·3 per cent butter-fat. Several other good yearly records were made and the herd as a whole made a good average for Shorthorns. A considerable number of bull calves of milking strain were sold to farmers in Manitoba and many more could have been sold had they been available.

Steer Feeding.—An experimental feeding test was conducted with two-year-old steers. Fourteen steers were fed and were divided in two lots. The object of the experiment was to determine the value of recleaned elevator screenings, now graded as "Standard Stock Food," as a feed for fattening cattle. One lot of steers was fed on these screenings, ground and mixed with bran, in the proportion of two and one-half per cent of screenings to one per cent of bran. The other lot was fed on oat chop. The coarse fodder in both cases was identical. The lot fed on screenings and bran made an average gain of 2·13 pounds per steer per day, and those fed on oat chop made a gain of 1·42 pounds per day. The cost of one hundred pounds of gain with screenings and bran was $17.63, while with oats it was $29.21.

It is probably too much to suppose that the screenings and bran are as much better than oats as these results would indicate, but it is at least reasonable to conclude that they are very satisfactory and valuable feed for steer feeding.

Sheep.—There are seventy-two head of sheep on the Farm, consisting of three pure-bred Oxford Down rams, one pure-bred Shropshire ram, one pure-bred Suffolk ram, eleven pure-bred Oxford Down ewes and the remainder, grade ewes.

The grade ewes are high grade Oxford Downs. An experiment is being conducted comparing the use of Oxford Down, Shropshire and Suffolk rams for breeding on these ewes. Last year was the first of this experiment. The lambs sired by the Suffolk ram were the best, the progeny of the Oxford ram came second and the lambs sired by the Shropshire ram were the poorest. It is believed, however, that the results are traceable probably more to the individuality of the rams than to the breed. The test is being continued.

Swine.—The swine on hand on March 31, exclusive of young litters, are two Berkshire boars and seven sows and one Yorkshire boar and eleven sows. During the year over two hundred young pigs were raised and marketed. Some of the best were sold to farmers for breeding and the remainder marketed for pork.

Experiments in pig pastures were continued and the results were corroborative of previous experiments, viz., that rape is the best annual crop for pig pasture and that oats, barley and rye are also very suitable, that ripe peas or squaw corn for hogging down do not give satisfactory returns.

Experiments in feeding recleaned elevator screenings to pigs were continued with results which confirmed previous results that this feed is fully equal to barley for fattening pigs.

POULTRY

The Barred Rock and White Wyandotte breeds are kept. All pullets are trap-nested and some excellent egg records have been made. Breeding is conducted with the object of increasing the utility of the fowl. A house for one hundred hens was built which illustrates the best points of poultry house construction as determined by experimental work in previous years.

The first Manitoba Egg-laying Contest was started on November 1, 1919. Ten colony houses were built to house this contest. Entries were received from Manitoba breeders and the following breeds are represented in the contest: Barred Rock, Partridge Rock, White Wyandotte, Silver-laced Wyandotte, Buff Orpington, Rhode Island Red, White Leghorn, Brown Leghorn, Ancona and Campine.

FIELD HUSBANDRY

Rotations.—The following rotations have been under test at this Farm for a number of years:—

"D," four years' duration (wheat, wheat manured, oats, summerfallow). This is purely a grain-growing rotation, except that manure is applied every four years.

"E," four years' duration (wheat, wheat, oats, summer-fallow): This is exactly the same as "D," except that no manure is applied, and is a typical grain-growing rotation.

"F," five years' duration (wheat, wheat, corn or roots, oats or barley, clover hay): This is a mixed farming rotation suited to conditions where it is desired to grow both a large amount of wheat and a large amount of fodder for stock.

"G," six years' duration (wheat, wheat, oats or barley, clover hay, pasture, corn or roots): This is also a mixed farming rotation and allows for pasture for stock as well as cropped land.

"H," six years' duration (wheat, wheat, summer-fallow, oats, hay, pasture): This rotation provides both grain crops and hay crops, but omits hoed crop.

"I," six years' duration (flax, oats, summer-fallow, wheat, hay, pasture): This rotation is of similar character to "H," but substitutes flax for one of the wheat crops.

"Q," eight years' duration (roots and peas, wheat or oats, hay, hay, pasture, pasture, pasture, green feed and rape): The land used in this rotation is light and gravelly and is therefore used as a sheep farm.

"W," ten years' duration (wheat, wheat, corn or roots, oats, barley, alfalfa, alfalfa, alfalfa, alfalfa, alfalfa): This rotation is adapted to a dairy or pure-bred stock farm where the chief object of crop growing is the production of a large quantity of good fodder.

The table which follows shows the average cost per acre of operating these rotations, including rent, use of machinery, and all the cost of handling the land and producing the crop (but not marketing). It also shows the average return per acre, and the resultant profit. These figures are based on normal pre-war prices; if present prices were used, much larger returns and profits would be shown.

Rotation	Cost per acre of operation. Average of 5 years	Returns per acre. Average of 5 years	Profit per acre. Average of 5 years
	$ cts.	$ cts.	$ cts.
"D"	10 19	11 99	1 80
"E"	8 50	10 73	2 23
"F"	11 93	15 98	4 05
"G"	11 38	17 14	5 76
"H"	8 89	12 22	3 33
"I"	9 10	13 76	4 66
"Q"	7 17	7 26	0 09
"W"	10 38	15 85	5 47

Cultural Experiments.—Deep ploughing is giving rather better results than shallow, though the figures obtained are not as conclusive as would be expected.

One ploughing of summer-fallow is giving equally as good results as two and means less work.

The substitution of a pasture crop for bare fallow has reduced the following wheat crop. June ploughing of summer-fallow has proven much better than July.

In seeding down grasses, better results have been obtained where seeding has followed corn or summer-fallow, than where grain was the previous crop, and the larger the number of preceding grain crops, the greater the difficulty in getting a good catch.

Better catches are obtained without a nurse crop than with one, but not enough better to pay for the loss of the grain crop.

In breaking up sod of tame grasses and clovers, best results have been obtained by breaking in July immediately after removing the hay crop and working as a summer-fallow during the remainder of the season.

In the application of barnyard manure on stubble land for growing wheat, oats or barley, best results have been obtained with all three grain crops by applying in the fall and ploughing in. The same result was also obtained in manuring for corn.

The substitution of grain crops ploughed in for green manure, instead of bare summer-fallow, resulted in a decrease in yield. Where the green crops were ploughed in early in July the yield was practically the same as on summer-fallow land, but later ploughed green manured land wasted too much moisture.

The results of a very extensive system of experiments with soil packers have shown no advantage from the use of packer on this soil.

CEREALS

In the variety tests of wheat, Marquis has again demonstrated its superiority by producing the largest yield of all varieties tested. Ruby was second highest and matured three days earlier than Marquis. In the tests with oats, Victory gave the best results for 1919 and Banner the best for a five-year average. Among varieties of barley the O.A.C. No. 21 variety gave the largest yield for 1919, but Manchurian did the best on the five-year average with O.A.C. No. 21 coming second. Tests of varieties of peas, rye and flax were also made.

FORAGE CROPS

Alfalfa gives the best results among perennial hay crops and western rye grass is the most satisfactory of the grasses. Sweet clover gives a heavy yield the first year after sowing but being a biennial dies down after that. Millet gave the largest yield of annual hay crops in 1919 but usually green oat hay gives the best return.

Corn was a fairly good crop in regard to yield and unusually good in regard to maturity. A considerable quantity of good seed was secured. Longfellow gave the largest yield but is rather too late for this district in any ordinary season. Northwestern Dent is about the most satisfactory in the average season, and Minnesota No. 13 is also recommended.

A large number of varieties and strains of mangels and turnips were tested, the results of which are available. The Yellow Intermediate type of mangel gives good results and is easy to handle.

HORTICULTURE

A large number of varieties of vegetables have been grown for test and the results are available for the use of correspondents or visitors. Cultural experiments have

also been conducted, especially with potatoes and tomatoes. Unusual success has been attained in the ripening of tomatoes. A large number of annual and perennial flowers are grown for test and demonstration. The trees and shrubs continue to be a demonstration of the possibilities of the country. Work with fruit is being continued.

BUILDINGS

A cottage for the gardener was erected. A one-hundred-hen poultry house was built and ten colony houses for the egg-laying contest.

EXHIBITIONS, EXCURSIONS, VISITORS, ETC.

Exhibits were made at the Manitoba Winter Fair and the Provincial Exhibition at Brandon in July. Prizes were won on live stock, including grand champion Yorkshire boar and grand champion Clydesdale mare.

"Farmer's Day" at the Farm, July 8, 1919, was poorly attended on account of bad weather. Many small parties and thousands of individual visitors inspected the Farm during the year.

The Superintendent gave an address on "Winter Housing of Swine" at the Annual Convention of the Western Canada Live Stock Union at Victoria, B.C. He also gave one on "The Ventilation of Farm Buildings" at the Annual Meeting of the Live Stock Association of Manitoba in Brandon. Agricultural meetings were addressed at several points in Manitoba and some work done in judging live stock and field crops at agricultural fairs.

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT, N. D. MACKENZIE, B.S.A.

THE SEASON

The season of 1919 was abnormal in many respects. Seeding commenced on the 19th of April and was general by the 21st. At the end of May the crops were very promising. A period of hot weather, high winds and drought followed which cut down the yield of all crops considerably. The fall was very open until October 1, when a very heavy frost was experienced and winter set in almost immediately without any break in the cold weather. Grains were a fair crop but forage crops of all kinds were very light. The potato crop generally was badly hit by the early freeze-up.

METEOROLOGICAL REPORT, 1919–20

—	Temperature					Rainfall		Snowfall		Total sunshine
	Maximum		Minimum		Mean					
	Date	°	Date	°	°	Days	Inches	Days	Inches	Hours
January	24	40	2	−34	14·67	.....	.....	5	12·25	53
February	10	38	26	−48	− 1·68	.....	.....	5	13	106·6
March	18	40	2	−33	10·09	.....	.....	4	10·25	129·5
April	28	69	23	17	40·13	4	0·87	1	3·50	163·8
May	28	93	4	22	54·09	5	1·39	.....	.....	241·8
June	27	96	1	35	65·96	9	2·81	.....	.....	293·7
July	16	94	26	40	65·84	6	2·68	.....	.....	311·9
August	18	95	26	38	65·06	5	1·89	.....	.....	267·7
September	12	89	27	22	53	5	0·93	1	1	138·6
October	7	73	25	−22	26·35	1	0·69	3	7·50	118·4
November	16	44	30	−24	11·40	.....	.....	4	11·25	66·8
December	19	40	10	−34	3·48	.....	.....	3	4	50·5
Total	.....	.....	.....	.....	.....	35	11·26	26	62·75	1,942·3

LIVE STOCK

Horses.—There are thirty horses on the Farm and of these sixteen are pure-bred Clydesdales and the remainder are work-horses and grade colts. Three pure-bred foals were raised during the year and two of them are very promising.

The cost of feeding a horse which is worked the entire year was found to be $180 at present prices of feed. The cost of feeding a colt from weaning to three years was $159.35.

Cattle—Shorthorns.—The herd numbers seventy-two, consisting of three stock bulls, eight bull calves and sixty-one females. Of these, six females and one bull were purchased at the Dryden-Miller sale of Imported Shorthorns and by careful selection it should be possible to build up a very high-class herd. Care will be taken, however, to retain the good milking qualities which the herd already possesses.

There is a very good market for all our surplus stock at good prices.

An experiment was conducted during the winter to determine the feeding value of sunflower silage for milch cows as compared with corn silage. The results obtained show that the palatability and feeding value of the sunflower silage are fully equal to those of corn, the only limiting factor being the very stimulating effect the sunflower silage had on the kidneys.

The cost of feeding a cow during the lactation period has been found to vary from $79.93 to $134.74, depending on her milk production. The cost of raising a calf to one year was $70.35; from one to two years the cost was $42.50.

Grade Cattle.—Twenty steers were purchased for experimental feeding in the fall of 1919. They were divided into two equal lots and used to compare the feeding value of recleaned screenings (Standard Stock Feed) as compared with barley as the main ration for finishing steers. The barley showed superior gains and a lower cost per pound gain. The steers on barley made an average daily gain of 1·68 pounds at a cost of 17·02 cents per pound and the ones fed on screenings made an average daily gain of 1·37 pounds at a cost of 18·79 cents per pound gain.

Sheep.—At present there is a flock of one hundred and eleven sheep, of which number, thirty-nine are pure-bred Shropshires and the remainder grades, with the exception of a pure-bred Oxford ram.

The grading up experiment has been continued using Shropshire and Oxford rams on range ewes, and the results have been uniformly good, the second and third cross ewes closely resembling pure-breds in type, and the weight of wool being increased from five and one-half to ten pounds per ewe.

The cost of feeding a ewe for one year was found to be $9.93, and of raising a lamb from weaning to two years was $13.92.

Swine.—The swine herd is twenty-four in number and consists of one Yorkshire boar and ten sows, one Berkshire boar and two sows and ten feeders.

Owing to the peculiarities of the season the pasture experiments with swine were a failure and no results were obtained. The cost of maintaining a sow for one year was found to be $28.34 and for raising a young sow from weaning to one year was $23.59.

POULTRY

Two breeds of poultry are kept on the Farm, namely, Barred Plymouth Rocks and White Wyandottes. Special attention has been paid to egg production and utility type, all birds being trap-nested. The average egg production of the birds retained in the breeding flock was 172 eggs in one year. The value of these eggs at prevailing prices was $6.04 and the feed cost $2.30, leaving a profit per bird of $3.74.

The demand for hatching eggs and breeding stock was far greater than our supply and a number of new houses were built to enable us to increase considerably the size of the flock so as to keep pace with the demand.

A laying contest was commenced during the year, twenty pens being entered by various breeders in the province. The birds will be trap-nested throughout the year and all birds laying over one hundred and fifty eggs recorded in the Record of Performance for poultry. Some of the pens are laying very well.

FIELD HUSBANDRY

Rotations.—Four rotations have been under test at this Farm for a number of years as follows:—

(C) Three-year rotation (wheat, wheat, summer-fallow). This is purely a grain growing rotation such as is generally practised, with slight variations, throughout the province.

(J) Six years' duration (summer-fallow, wheat, wheat, oats seeded down, hay, pasture). This is a mixed farming rotation but does not include a hoed crop.

(P) Eight years' duration (summer-fallow, wheat, wheat, summer-fallow, corn, barley seeded down, hay, pasture). This is a mixed farming rotation with oats not included in the crops grown.

(R) Nine years' duration (summer-fallow, corn, wheat, oats, summer-fallow, wheat, oats seeded down, hay, pasture). This also is a mixed farming rotation with barley not included in the crops grown.

The following facts should be noted in connection with these rotations:—

The land in rotation (C) is becoming infested with weeds and it seems impossible to cope with them in such a rotation.

Rotation (J) is practically a failure on account of the seeding down being done so far from summer-fallow, the result being that a good stand of hay is only secured in very wet years.

Both (R) and (P) are fairly satisfactory, the land being fairly free from weeds and good crops are obtained.

The following table shows the cost per acre of operating these rotations during the past year, including rent and use of machinery. The returns per acre and profit are also shown, all figures being based on present day prices.

Rotation	Cost of operating per acre	Returns per acre	Profit per acre
C	$18 52	$28 57	$10 05
J	18 53	19 87	1 34
P	20 98	32 09	11 11
R	24 47	40 15	15 68

Cultural Experiments.—Fairly deep ploughing is giving the best results. The benefits are particularly noticeable in the stubble crop.

Summer-fallows should be ploughed early and fairly deep. Two ploughings are not necessary but fall cultivation previous to fallowing increases the yield slightly.

Fall ploughing of stubble gives best results for wheat and fall cultivation and spring ploughing for oats.

In order to secure a catch of grass it is necessary to seed down on land that has been recently summer-fallowed.

In breaking up sod of cultivated grasses and clovers best results are obtained by ploughing immediately after removing the hay crop and working as a summer-fallow the remainder of the season.

The ploughing under of green crops for manure has not given as high yields as bare fallow.

A good seed bed increases the yield materially.

Very little difference was noted in the value of the various types of packers.

Seeding at various depths has not shown any definite results.

Applications of commercial fertilizers have not increased the yield sufficiently to repay the cost.

CEREALS

Variety test work with cereals has been continued. Marquis wheat continues to be the highest yielding variety. Leader was the heaviest yielding oat on fallow, followed closely by Victory and O. A. C. No. 72, both of which latter varieties outyielded it on stubble. The two-rowed varieties of barley were the heaviest yielders, Duckbill and Danish Chevalier being the highest. Of the six-rowed varieties O.A.C. No. 21 and Manchurian were best. Variety tests of peas, rye, and flax were also conducted.

FORAGE CROPS

Corn was a fairly good crop of excellent quality. The long season enabled a quantity of seed to be saved. Taking into consideration quality and yield, North West Dent was the best variety. Roots were only a fair crop. Extensive tests were carried on to compare the trueness to type as well as yield of seed from different sources. Again this year the hay mixtures containing alfalfa demonstrated the value of this plant by the comparatively high yield procured.

HORTICULTURE

Fruits.—A fair yield of all classes of fruits was obtained with the exception of gooseberries.

Vegetables.—Variety and cultural tests were continued in order to procure data on the most suitable varieties and methods for this part of Saskatchewan.

Flowers.—The past season was not a particularly favourable one for annual flowers, but perennials did well.

Trees.—Considerable winter-killing is noticeable among the evergreens, Scotch and Austrian pine and the Colorado blue spruce being damaged.

BUILDINGS

Twenty new colony houses for poultry were constructed during the year. Ten of these were used to house the Laying Contest and the remainder for housing our increased flock.

EXHIBITIONS

Exhibits of live stock and poultry were made at the Regina Summer and Winter Fairs, the Swift Current Poultry Show, and the Sintaluta Fair. At the Regina Summer Fair, the only show to which a competitive exhibit was sent, one of our Clydesdale mares was Canadian Bred Champion and another Reserve Grand Champion.

VISITORS

A large number of persons visited the Farm during the year. although, owing to the shortage of rolling-stock on the railways, it was impossible to arrange for special excursions.

EXPERIMENTAL FARM, ROSTHERN, SASK.

REPORT OF THE SUPERINTENDENT, WM. A. MUNRO, B.A., B.S.A

THE SEASON

The prominent feature of the season of 1919 was the light rainfall and its consequent results in soil drifting and light crops. There was the lowest precipitation for the five growing months of any year since records have been kept at the Station.

Following is the meteorological record for the year ending March 31, 1920:—

WEATHER OBSERVATIONS TAKEN AT ROSTHERN EXPERIMENTAL STATION

Month	Temperature F.			Total precipitation	Total sunshine
	Highest	Lowest	Mean		
1919	°	°	°	Inches	Hours
April	74·2	11·7	42·7	0·37	218·1
May	97·0	19·0	55·86	0·36	295·7
June	94·0	29·4	64·76	2·28	330·1
July	102·0	41·2	65·99	1·05	340·0
August	92·6	38·8	64·295	1·48	268·9
September	77·2	23·1	51·58	2·79	165·0
October	64·5	−11·8	26·33	0·55	102·1
November	43·3	−25·6	8·9	0·40	113·5
December	39·7	−36·1	1·62	0·20	108·0
1920					
January	31·8	−45·0	−7·0	1·20	102·5
February	39·7	−30·2	12·58	0·20	121·8
March	39·6	−28·0	12·84	0·85	189·9
Total				11·73	2,355·6
Average for years 1912–13–14–15–16–17–18				14·43	2,218·6
Total for five growing months, April to August, 1919				5·54	1,452·8
Average for five growing months, 1912–13–14–15–16–17–18–19				8·83	1,329·65

SOIL DRIFTING

Much damage was done throughout most of Saskatchewan with soil drifting in 1919 and some important lessons were gleaned from it at the Experimental Station. The same experience had been gone through in 1910, but to a lesser degree. In 1910 there was only one quarter-section occupied by the Experimental Station. It had been cropped almost continuously for the previous twelve years and was summer-fallowed in 1909. In 1910 it was practically the only land in the district which drifted, and it drifted so badly that no crop could gain a foothold till after a snow-storm in June. This quarter-section had been worked under several rotations for years 1911 to 1919, all of which included either grass or manure once in six years. In 1919 there was no drifting whatever on that quarter-section, whereas land all around that was in crop drifted far worse than any in 1910.

In 1914 there was added to the Experimental Station three quarter-sections which had been wholly devoted to grain growing for ten years previously. The land was weedy and from 1914 to 1919 was worked with the end in view of eradicating the weeds. There was no grass introduced nor manure applied to most of it. In 1919 any part of it that had not been manured or sown to grass within the past five years drifted badly.

There was one exception. A clump of trees covering about two acres stands at the south of the farm. The trees in this are approximately 30 feet high. To the northwest of this clump for a distance of approximately 1,500 feet there was no drifting and there was a crop.

It was not possible to grow a garden in 1910, but during the following years hedges were grown 200 feet apart east and west and 400 feet north and south. These had reached a height of 9 feet by 1919. In 1919 the garden was the best of any we have had.

Conclusions.—1. Heavy applications of manure once in four to six years tend to prevent soil drifting.

2. Seeding to grass once in six years and leaving in sod two years effectively prevents soil drifting.

3. A stand of trees protects the land in the direction towards which the wind is blowing for a distance of fifty feet for every foot in height of the clump of trees.

4. A garden is assured only when it is protected by efficient windbreaks.

LIVE STOCK

Horses.—The number of horses on the Station has been increased by three colts and decreased by one mare, which died. For beginning operations in 1920 there are sixteen work-horses and one driver, two two-year-old colts and three yearlings. The idle horses are fed night and morning and turned out in a field during the day all winter.

Cattle.—Owing to shortage of feed no steers were purchased for winter feeding. For the same reason the milk production from the dairy cattle was much below that of previous years. The cows were in as good condition as formerly but owing to lack of succulent feed in the shape of roots the milk production was greatly reduced.

All the cattle were affected during the summer of 1919 by a disease of the eye known as keratitis. A small, white, opaque swelling would appear on one of the eyes and within four to seven days cover the whole eye. Sometimes both eyes would be affected at the same time but usually the second would not be affected till the first was recovering. The eye was blind so long as it was covered by the swelling, which lasted from four to six weeks. In some cases a wash was applied twice daily made up of three grains of nitrate of silver to one ounce of soft water and one grain of sulphate of morphia. It was found, however, that all the cattle recovered completely in from six to eight weeks whether they were treated or not.

Sheep.—The start in sheep at the Rosthern Station was made in December, 1915, with the purchase of one hundred grade ewes and four Leicester rams. The proceeds of sales of wool, mutton and pelts each year following were as follows:—

Year	Wool	Mutton	Pelts	Total
1916..	$ 250	$ 459	$ 60	$ 769
1917..	600	455	146	1,201
1918..	593	551	106	1,250
1919..	675	610	154	1,439
Totals..	$2,118	$2,075	$466	$4,659

In December, 1919, we had the same number of sheep we began with and of a much superior grade.

The cost of feeding a sheep a year was as follows:—

Hay, 900 lb. at $7 per ton	$3 15
Oats and barley, 118 lb. at $2 per cwt	2 25
Turnips, 360 lb. at 25 cents per cwt	0 90
Pasture	2 00
Total	$8 30

These prices for food are low for the present year but considerably above that of the past four year average. On most farms the pasturing of the sheep may be considered an asset which considerably reduces the cost of feed.

The greatest trouble we have had in connection with keeping sheep has been goitre in the new-born lambs. For two years the loss was as high as 29 per cent, but in 1919 and 1920 there have been no losses from this cause. To the present there is no satisfactory explanation of the cause of the disease.

Swine.—There were ten Berkshire sows and a boar held as foundation stock for the pigs of 1919 from which were raised to maturity 68. An attempt was made to compare values of different pastures with different grains as supplementary feeds, but the exceedingly dry season prevented any possibility of the pastures developing. A comparison was made between use of a self-feeder and hand feeding in which only about half the quantity was used in hand feeding. The pigs were on this experiment for 123 days and following are the results:—

	Ground feed consumed	Initial weight	Final weight	Gain pounds
Hand fed	6,358 lb.	1,470 lb.	2,813 lb.	1,343
Self-feeder	14,280 "	1,420 "	3,962 "	2,542

There was almost twice the gain from slightly more than twice the feed. But the figures do not show all. When the two lots came to be fattened it was found that the self-feeder lot required little to put them in shape for market whereas the lot on limited rations required a great deal more time and feed. Nevertheless the lot on short rations were much superior to many pigs of the same age in the country, which goes to show that more liberal feeding of growing pigs in many cases would net the farmers much greater profit.

POULTRY

A beginning was made in poultry in 1919. A flock of 130 pullets was developed from eggs of a bred-to-lay strain of Barred Plymouth Rocks secured from the Experimental Farm at Indian Head. Six colony houses were built, each 8 feet by 12 feet, with cotton fronts. There were also built two permanent houses each 16 by 32 feet. It is expected that the houses will be filled from the progeny of last year's pullets.

FIELD HUSBANDRY

Owing to high winds and dry weather there were no hay yields and little grain yields in 1919. A field of sunflowers was cut off twice by drifting sand and some of it made a third start and came to maturity. The growth was so irregular that no fair estimate could be made of its yield. Part of a field of turnips was blown out completely and about three acres yielded a fair crop. All the experimental plots in grain, grasses and roots were ruined.

HORTICULTURE

Despite the adverse weather conditions the garden was the most satisfactory we have ever had. The soil was rich in humus having been heavily manured each year

for the past eight years, which gave it holding capacity for moisture. The hedges that were planted in 1912 afforded sufficient shelter to protect the plants from injurious effects of the winds, and the hot weather was conducive to early maturity. The foregoing applies to the vegetables and fruit gardens but not to the lawns nor flowers. The lawns comprise about two acres and were brown till the rains in late August. The flowers border the lawns on the south and east and of course were ruined by exposure to the north, north-west and west winds. Despite winds and drouth the shrubs and trees made normal growth except where they were planted in or near sod and in no season will they do well in this climate in the proximity of grass.

The greatest handicap to gardening in this province is the danger of late spring and early autumn frosts and there seems no sure way of overcoming the danger. All plants should be in the ground by the end of May for reasonable assurance of maturity and about one year in five the tender ones are caught by the June frosts.

Potatoes.—There were thirty-two varieties of potatoes tried in 1919 with a yield varying from 256 to 452 bushels per acre. Irish Cobbler, 382 bushels per acre, and Early Ohio, 308 bushels per acre, are the two varieties recommended for family use.

Potatoes is the only crop that has consistently given high yields every year during the past eleven years despite drought, hail, frost and winds, and yet throughout the north of Saskatchewan there are very few potatoes grown more than are sufficient to supply local requirements. The prices every year have been sufficient to give fair profits and in some years high profits. The cost of growing potatoes is low because there is no spraying to be done for either insect or disease and there are no stones in the soil to interfere with cultivation. It seems strange that larger areas are not devoted to potato culture.

EXPERIMENTAL STATION, SCOTT, SASK.

REPORT OF THE SUPERINTENDENT, M. J. TINLINE, B.S.A.

THE SEASON

During the winter of 1918-19 the snow had covered the ground to a good depth and was uniformly distributed, consequently when the spring thaws came there was little run off and most of the water soaked into the soil providing ample moisture for germination of all early sown seed. The ploughed land was bare of snow by April 7 and seeding commenced on the 15th and was completed comparatively early.

May and June were unusually warm and dry and during the latter part of May and throughout the greater part of June wind-storms prevailed and soil drifting occurred in many districts doing considerable damage to grain crops. Twelve degrees of frost were registered on the morning of June 2; all tender vegetation was destroyed and grain crops were frozen to the ground. The dry weather continued throughout July and the first good rain of the season fell on August 10; as a result grain crops were light and matured early. Wheat harvesting commenced in late July. The rain caused a second growth in later grain crops, this was welcomed to help out the feed supply for stock. Potatoes, field roots, etc., made a wonderful growth after the rain and as killing frosts kept off until late September good crops were secured.

Winter set in early with a snowstorm on October 8, and by the 9th the ground was frozen too hard for ploughing. From October 21 to 24 there was a heavy fall of snow for this district and the weather continued unusually cold during November and December. During the first half of January and most of February milder weather prevailed, but winter continued up to the end of March.

The long severe winter together with the scarcity of feed resulted in a loss of live stock on a number of farms.

METEOROLOGICAL RECORD, 1919-20

Month	Temperature F.			Precipitation				Total Sunshine
	Highest	Lowest	Mean	Rainfall	Snowfall	Total	Heaviest in 24 hours	
1919	°	°	°	Inches	Inches	Inches	Inches	Hours
April	72·0	8·5	41·99	0·79	.....	0·79	0·20	206·9
May	92·5	18·8	53·38	0·88	.....	0·88	0·40	285·1
June	97·0	20·2	62·08	0·91	....	0·91	0·41	333·8
July	99·8	36·7	64·65	0·75	.....	0·75	0·23	328·0
August	90·3	40·0	62·9	2·56	.....	2·56	1·11	267·6
September	79·0	19·9	52·2	1·56	.....	1·56	0·60	162·6
October	69·0	−19·0	26·4	0·32	0·90	1·22	0·30	100·7
November	44·5	−28·2	9·76	.....	0·15	0·15	0·10	115·3
December	40·0	−31·7	5·16	.....	0·42	0·42	0·15	102·6
1920								
January	30·3	−41·0	− 3·5	.....	1·30	1·30	0·50	100·7
February	35·7	−20·8	11·64	.....	0·275	0·275	0·10	118·7
March	42·0	−26·0	14·6	.....	1·35	1·35	0·30	135·3
Total for year				7·77	4·39	12·16	.....	.....
Total for six growing months, April to September				.....	.....	7·45	.....	.....
Average for nine years				.....	.....	13·30	.....	.....
Average for nine years for six growing months April to September				.....	.....	10·23	.....	.....

LIVE STOCK

Horses.—The fifteen horses on the Station have been increased by the addition of one grade Clydesdale filly foal from one of the mares and by the purchase of two pure-bred Percheron mares. The experimental work in determining the cost of horse labour and the cost of raising colts has been continued.

Cattle.—The experimental work with cattle has been restricted to winter fattening steers. The investigational work was conducted along three lines; first, with the object of determining the profitableness of this branch of farming; second, to determine the loss from dehorning just previous to putting in the feed lot and third, to ascertain the value of sunflower ensilage as a part of the ration. The average profit per steer over cost of feed amounted to $19.25. It was found that dehorning caused the loss of 0·27 of a pound per animal per day for the entire fattening period. Steers fed 20 pounds of sunflower ensilage per day made an increased gain of 0·44 of a pound per animal per day over steers that had no ensilage. Sunflower ensilage proved to be worth $13.81 per ton when added to ration of straw, roots and meal.

Sheep.—The past has been one of the most profitable years for sheep. The lamb crop averaged one and one-quarter lambs per ewe and the weight of fleece from the entire flock averaged 9½ pounds. Good prices were realized for the wool and sheep sold for mutton or for breeding purposes brought satisfactory returns.

The experiment in breeding ewe lambs conducted for three years has shown this practice unprofitable. Ewes bred when shearlings produced as many lambs in the one season as the others raised in the two years.

Swine.—Wintering swine in a large central building versus housing them in portable cabins has shown the latter method the more profitable. Only one crippled animal was noticed in the lots in the cabins, while quite a number of the young pigs from the same litters stiffened up when kept in the central building. Brood sows wintered in the cabins produced strong, healthy litters. In the fattening experiments

barley and oats were found to give better gains than standard screenings and oats, or shorts and oats.

The experiments with self-feeders indicate that where the man in charge of the swine is an expert feeder, as good gains can be made from the trough method of feeding as with the self-feeder, but where labour is scarce, or the feeder unskilled the self-feeder lots make the more profitable gains.

The question of supplying pasture for very young hogs, or for hogs that are being finished for market is a debatable one. Brood sows can be more economically fed if some pasture is used. But more experimental work with pasture will be necessary in order to determine the best kinds of pasture and the ages at which the swine make the most use of the pasture.

POULTRY

One permanent house for 100 birds was erected during the summer. The stock now consists of 224 birds, principally of the Barred Rock breed. A small flock of White Wyandottes was secured from Indian Head Experimental Farm, and two pens of Buff Orpingtons are kept. All the stock has been trap-nested. Out of a pen of 50 Barred Rock pullets, three laid over 200 eggs and 16 ran over the 150-egg record.

FIELD HUSBANDRY

Rotation of Crops.—No changes were made in the rotation work during the season of 1919. Records were kept of the cost of the operations conducted on the different fields and the return values therefrom. The investigational work in dates of seeding cereals and quantities of seed grain to use was continued. It was found that early seeding for wheat and oats was the most profitable, while for barley late April seeding gave the best returns. Barley appears to be more easily damaged by late spring frosts than the other grains. In the tests of quantities of seed, comparatively light seeding gave the best yields, one and one-half to two bushels of barley, one and one-half to two bushels of oats, and one to one and one-quarter bushels of wheat on summer-fallow gave heavier yields than lighter or heavier seeding.

Cultural Experiments.—In the cultural investigational work it has been found that the use of surface packers has given a small but consistent increase in yield over plots where either the subsurface or combination packers have been used. Providing the operation was timely, the use of the packer has given an increased yield. Packing after seeding has always proven profitable, while packing before seeding has only been beneficial where the seed bed was too loose. The most advantageous times to use the packers appear to be immediately after ploughing and immediately after sowing.

In the manuring experiments ploughing manure under has given superior yields to spreading the manure on the surface of the ploughed land.

In the stubble treatment experiments the snow held by the stubble during the winter appears to be of more value than is generally realized. Ploughing under, discing or burning stubble in the autumn has resulted in decreasing yields as compared with spring ploughing, spring burning, etc., particularly has this been noticable during unusually dry years.

The seeding down experiments have given some useful data. Using a nurse crop in seeding down to grass has on an average decreased the yield one-half ton per acre. In the second cropping year the hay crop is usually dependent on the season's moisture and not on the method of seeding down providing a good stand has been secured.

CEREALS

The usual variety tests with cereals have again been conducted. For the most part later maturing sorts such as Red Fife wheat, Banner oats and Hannchen barley

have given heavier yields than earlier maturing kinds. This is no doubt due to the crops not being so far advanced when the late summer rains came and consequently, being more benefited thereby. Of the newer varieties under test Liberty oats, Hannchen barley, Early White peas and Prolific spring rye give promise of proving useful. Novelty flax, a variety introduced by the Dominion Cerealist, has outyielded Premost. A field bean known as the Norwegian gave a medium crop of ripe beans.

HORTICULTURE

One mile of windbreaks was set out during the spring, the object being to determine in later years the influence of windbreaks on the yields of grain crops.

Fruit.—In the orchard Native Manitoba plums fruited for the first time. Bush fruits gave about one-half the average crop due to late spring frosts, while the strawberry crop was rather light owing to the drought.

Vegetables.—The season proved much more favourable for the production of vegetables than the preceding year. Beans and corn in particular yielded heavy crops. Potato yields were excellent but the tubers were unshapely owing to the rains coming late stimulating growth after the tubers were well advanced toward maturity.

FORAGE CROPS

The dry weather during the early part of the season resulted in the grass crops being light, while alfalfa grown in rows yielded at the rate of two tons of hay per acre. Oats and peas in two cuttings gave 2 tons 200 pounds. Sudan grass and Japanese millet were destroyed by frost on June 2 and were resown on June 3. The former gave less than one ton per acre and the latter one and three-quarter tons.

Splendid crops of turnips were harvested, while fair crops of corn and sunflowers were secured. It is interesting to note that sunflowers withstood 12 degrees of frost on June 2 with little injury and 3 degrees on September 2 only damaged some of the leaves on some plants.

EXHIBITIONS AND EXCURSIONS

An exhibit from the Experimental Station was staged at the summer fairs at Saskatoon, Macklin, Luseland, Plenty, Bounty, Alsask, Kindersley and Zealandia.

The usual midsummer picnics and excursions were held and about 2,900 people visited the Station during the year.

BUILDINGS

The new buildings erected consisted of a one-hundred bird poultry house, a central building for swine, a silo, and cheap shelters for feeder cattle and sheep.

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

REPORT OF THE SUPERINTENDENT, W. H. FAIRFIELD, M.S.

THE SEASON

The crop season of 1919 was the driest ever experienced in the Lethbridge district since meteorological records have been kept or since farming has been attempted. The total precipitation from April 1 to July 3 was 3·84 inches. This would have been sufficient to produce at least some crop had there been any moisture stored in

the soil and subsoil from the year before, but the season of 1918 was also extremely dry so that every particle of available soil moisture appeared to be exhausted at the end of that growing season. In fact the rainfall during the summer of 1918 was so scanty that extremely little moisture was stored in the soil on well summer-fallowed fields so that even crops seeded on summer-fallowed land in 1919 started out with a serious handicap.

The first work on the land was done April 2. The last frost in the spring occurred on the morning of June 1, when the minimum temperature recorded was 31 degrees. The first frost in the fall was on the morning of September 26, when the temperature dropped to 32 degrees, and a killing frost occurred on the 29th.

Grain crops were seeded in good season and made a good start but the dry May followed by a warm June and July, when hot,dry winds were prevalent, made satisfactory growth impossible. All crops on dry land were a practical failure, even grain sown on summer-fallowed land in many cases did not develop sufficiently to make harvesting possible. On irrigated land all kinds of crops did well. The yields of alfalfa hay were particularly good not only on the Station but throughout the district. Service rendered by the Irrigation Company was very satisfactory and no serious shortage of water was felt by the farmers due to the company's main canals being silted up as was the case in 1918.

The precipitation for the last months of 1918, which would affect the amount of soil moisture at the beginning of the winter, was as follows:—

1918—September	1·07	inches
1918—October	0·24	inches
1918—November	0·43	inches
1918—December	0·46	inches
Total	2·20	inches

From the above it is quite apparent that the soil was very dry at the beginning of the calendar year of 1919.

METEOROLOGICAL DATA FOR CALENDAR YEAR 1919

Month	Temperature F.			Precipitation inches	Sunshine in hours
	Maximum	Minimum	Mean		
January	57·0	— 5·0	34·27	0·06	105·1
February	60·0	−26·0	14·35	0·95	94·6
March	62·0	−35·0	16·40	0·75	150·4
April	78·0	21·5	44·94	0·47	229·8
May	89·0	18·5	52·15	1·75	216·0
June	95·5	31·0	59·48	0·56	325·6
July	97·5	36·5	64·41	1·06	343·4
August	96·0	38·0	64·74	1·05	301·1
September	86·0	26·0	53·35	2·04	228·6
October	73·0	−15·0	31·95	1·78	143·7
November	61·0	−13·5	21·32	1·26	99·1
December	55·0	−38·0	18·23	0·55	96·1
Total for year				12·28	2,333·5
Average for 18 years				15·618	.....
Total for four months of growing season, April 1st to August 1st, 1919				3·84	.....
Average for four months of growing season April 1st to August 1st for 18 years				8·026	.....

LIVE STOCK

Horses.—At the present time there are twenty-two head of horses at the Station, made up of twelve work-horses and drivers and ten young horses, four of which are this year's foals. All the horses were wintered in a corral with an open shelter shed except the drivers and one draught team. Cost data were not kept on the feed

consumed, but the horses wintered in the open came through in equally as good condition as did the stabled ones, and appeared to have as much heart, if not more, for the spring's work as did the ones that were housed. The saving in labour required in the feeding and care of those kept outside resulted in considerable economy.

Cattle.—For the first time for a number of winters no feeding tests with steers were carried on owing to the scarcity and high price of feed. Four milch cows are kept to supply milk to the employees on the Station.

Sheep.—A flock of ninety-eight grade Shropshire ewes were kept on the Farm during the summer and 132 lambs were reared. Cost data on the same were obtained. Five pure-bred Lincoln ewes and four pure-bred Rambouillet ewes are being used in cross-breeding experiments.

Early in October, 800 head of grade Merino ewes were purchased to carry out an experiment to determine the feasibility of alfalfa growers on irrigated land carrying fairly good-sized flocks of sheep on their farms and for summer pasture using the Forest Reserve in the Rocky mountains. Complete data in regard to cost of wintering these were kept and the coming summer's expenses will be obtained.

POULTRY

The results of experiments with poultry for the past year have been satisfactory. The Barred Plymouth Rock breed is the only one kept. The main object of the work carried on is to develop a better strain of layers and to distribute breeding stock from them amongst the farmers. Tests carried out indicated that April is the best month to hatch Plymouth Rock pullets for winter layers. Trap-nesting of all the pullet stock was continued. Out of one hundred and fifty hens thirty-eight produced over 200 eggs for the year and ninety of them produced over 150. In the spring of 1919 there were hatched 915 chicks. All the better cockerels were disposed of to farmers for breeding purposes and the demand as usual was greater than the supply. During the four winter months of 1919-20 the best pen of 55 pullets averaged over 70 eggs each, and several of them produced over 100 during this period. The cost of production was twenty-five cents per dozen with feed at prevailing prices. A Laying Contest was begun November 1 with eleven pens entered.

BEES

The work carried on with bees during the past year was quite successful. Two colonies were wintered in a "dug-out" cellar and came out in excellent condition. Two 2-pound packages of bees from Alabama were received May 10. One of the wintered colonies and one of the purchased ones were used for division to increase the number of stands. The other two colonies were used for honey production, 407 pounds of extracted honey being obtained from the wintered one and 281 pounds from the colony made up from the 2-pound package of live bees. The two colonies used for division produced five strong colonies before winter set in besides yielding 152 pounds of extracted honey. The season's returns, confirming previous tests, indicate the excellent possibilities of profit in bee-keeping in the alfalfa growing districts in southern Alberta.

FIELD HUSBANDRY

As usual most of the field experiments were conducted in duplicate on the irrigated and non-irrigated parts of the Station. The comparative tests with the various rotations continue to furnish valuable information and data on the cost of production of field crops as well as to show the best arrangement of the crops. The following is a list of the rotations under test:—

Rotations Non-irrigated land.—Rotation "B," two years' duration, wheat, summer-fallow. Rotation "C," three years' duration, summer-fallow, wheat, coarse grain. Rotation "M," six years' duration, summer-fallow, wheat, coarse grain manured in fall, summer-fallow, peas and oats for hay, barley or oats. Rotation "S," nine years' duration, summer-fallow, manured for hoed crops, hoed crops, wheat, summer fallow, wheat, coarse grains, summer-fallow, peas and oats for hay seed to fall rye, rye pasture. Rotation "T," ten years' duration, summer-fallow, wheat, oats or barley, seed to alfalfa, alfalfa hay or seed for two years, summer-fallow, hoed crop, wheat manured in fall.

Rotations on Irrigated land.—Rotation "U," ten years' duration, seeding alfalfa, alfalfa for five years, hoed crop, wheat, oats, barley. Rotation "V," alfalfa continuously.

The following table shows the average cost, the returns and profit per acre for the past seven years, of the various rotations. These values are all figured on normal pre-war prices so that the years are comparable. If the present return values were used the profit would be much greater notwithstanding the increased cost of labour.

Rotation	Duration	Average cost per acre 8 years	Average returns per acre 8 years	Average profit per acre 8 years
Non-irrigated land—	Years	$	$	$
"B"	2	7·46	11·14	3·68
"C"	3	7·19	12·73	5·54
"M"	6	9·59	13·27	3·68
"S"	9	9·42	13·14	3·72
"T"	10	9·43	17·85	8·42
Irrigated land—				
"U"	10	17·30	63·75	46·45
"V"	1	9·00	52·06	43·06

CEREALS

All cereals in the variety test plots on the non-irrigated land were a practical failure due to the drought. The straw was so short that they had to be cut with a mower and the yields were insignificant. Good results were obtained from the irrigated plots and compared favourably with past years. The highest yield of wheat was the "Pioneer," 52 bushels 30 pounds per acre; "Danish Island" oats gave 163 bushels 30 pounds per acre; "Bark's" barley gave 101 bushels 12 pounds per acre; "Golden Vine" peas gave 28 bushels per acre.

FORAGE CROPS

Although all classes of forage crops produced well on the irrigated part of the Station, those grown on the dry land made a practical failure in most cases.

Indian Corn.—Ten varieties were tested on irrigated land. "Longfellow" gave the best returns, yielding at the rate of 15¼ tons of green feed per acre. On the dry land the corn did not grow high enough to make it worth while to harvest.

Roots.—Of the 22 varieties of turnips tested, the "Invicta" gave the best yield, which was 18 tons per acre on the irrigated land. All of the turnips suffered materially from attacks of aphides. No turnips were produced on the dry land. The best varieties of mangels yielded 30 tons and over per acre on the irrigated land but failed on the dry land. Sugar beets yielded at the rate of 15 tons per acre on irrigated land but failed on the dry land.

Alfalfa.—The field lots of alfalfa on the irrigated land gave an average yield of between 4 and 5 tons of hay. On the dry land even the alfalfa grown in rows barely grew high enough to cut.

Pasture mixtures.—Interesting data are being collected as to the carrying of various mixtures for pasture. A mixture containing alfalfa gives greater returns than any we have tried without alfalfa. Another interesting point that has been demonstrated is that where there is a good turf of grass at the base, cattle and sheep appear to pasture on the alfalfa with no tendency to bloat.

Sunflowers.—Sunflowers made a particularly good showing and demonstrated the possibility of getting a large and satisfactory tonnage from this new forage plant.

HORTICULTURE

A fair quantity of crabapples was produced from some of Dr. Saunders' cross-bred varieties. A large number of plum trees bore fruit. These were all selected seedlings of the native plums of Manitoba. The vegetable garden on the irrigated land produced well but on the non-irrigated land the results were disappointing. All ornamental trees and shrubs wintered well.

IRRIGATION

Keen interest has been developed in irrigation throughout the southern part of the province due to the three very dry seasons just passed. The Superintendent, in consequence, attended many farmers' gatherings and addressed them on questions connected with irrigation.

DOMINION EXPERIMENTAL STATION, LACOMBE, ALTA.

REPORT OF THE ASSISTANT TO THE SUPERINTENDENT, B. C. MILNE, B.S.A.

THE SEASON

The average total precipitation at this Station for the twelve past years has been 17·575 inches. In 1919 a total precipitation of 16·683 inches was recorded, but the rainfall of 12·755 inches during the growing months was below the average. The first half of April was cool with light rain and snowfalls and work on the land did not start until the 19th of the month. Seeding operations were again delayed when snow fell May 2, and remained until the 10th. No damaging frosts were experienced during the growing season, but dry weather during the latter half of May, June, and July prevented the usual rank growth of straw. Very good yields of grain were obtained, those on the forty-acre fields of the main farm rotation being double what was obtained the previous year. Threshing operations were delayed by several rainfalls and scarcely a furrow was turned in many districts when winter set in October 20, 1919. Unfortunately a large number of bushels of potatoes were frozen in the ground throughout Central Alberta. All fall work at this Station was completed before the freeze-up, with the exception of about twelve acres of ploughing. The winter of 1919-20 will long be remembered for its steady severe temperatures and the scarcity and high prices of feeds.

METEOROLOGICAL RECORDS

Month	Temperature F.			Precipitation				Total Sunshine
	Mean	Highest	Lowest	Rainfall	Total Snowfall	Precipitation	Heaviest in 24 hrs.	
	°	°	°	Inches	Inches	Inches	Inches	Hours
January	21·5	48·8	− 4·6	.....	2·00	0·20	0·15	74·2
February	12·69	46·8	−40·6	.....	8·18	0·818	0·40	100·7
March	28·77	48·8	−38·1	.....	7·70	0·770	0·05	156·1
April	42·86	72·3	21·4	2·30	.....	2·30	1·27	205·2
May	48·08	88·9	12·4	2·14	1·0	3·14	1·2	231·0
June	56·43	90·5	27·9	1·029	.....	1·029	1·85	284·9
July	60·02	92·6	30·4	2·321	.....	2·321	0·745	259·0
August	58·68	91·6	31·9	1·635	.....	1·635	0·40	245·0
September	50·4	79·1	17·4	2·33	.....	2·33	1·53	188·0
October	27·9	72·6	−10·6	0·64	.....	0·64	0·25	97·7
November	14·7	54·2	−34·6	.....	11·8	1·18	0·8	102·1
December	12·92	49·8	−38·5	.....	6·2	0·62	0·31	97·4
Total for year				12·395	36·88	16·983	.....	2,041·3
Average for 12 years				.....	.....	17·575	.....	2,146·4
Total for 6 months growing season, April to September, 1919				.....	.....	12·755	.....	1,413·1
Average for 12 years for six growing months, April to September				.....	.....	13·781	.....	1,452·9

LIVE STOCK

Horses.—The horses at this Station number 23 head. There are two pure-bred Percheron mares, four pure-bred and eight grade Clydesdale mares, and two pure-bred Hackney mares, besides seven grade geldings of Clydesdale and Hackney breeding. No foals were raised during the year. Twelve horses were wintered in the shelter of the brush at a cost of 21·5 cents per head per day.

Dairy Cattle.—There are now 36 pure-bred Holstein-Friesian cattle in the dairy herd. The young Holstein heifers are a very promising lot, having plenty of size, good constitution and evidence of good feeders and milkers.

In the grading-up test the improvement brought about by the use of a good bull of dairy breeding is very marked. This experiment is being continued as there are still some heifers in the test to freshen.

Milk from the dairy herd has been manufactured into Cheddar cheese and sold locally at 30 cents per pound.

The average lactation period of all cows which finished during the fiscal year was 328 days, while the average milk record for this year was 8,093·7 pounds. The average profit per cow for the year for her product made into cheese was $98.12.

Beef Cattle.—There are now at this Station 47 pure-bred Aberdeen-Angus cattle, among which are a number of exceptionally good individuals. The herd is headed by a young bull, Eliminator of Gwenmawr 3, a strong well-bred animal and a good breeder. An eighteen months old grade steer won first in his class at the Calgary Winter Fair and was reserve champion of the show. There have been no losses from disease during the year, the entire herd having been vaccinated as a precaution against black-leg. Young bulls from the herd are being disposed of at reasonable prices to breeders as they reach suitable ages. Experiments conducted with beef cattle from which valuable data were collected are as follows: Green feed and hay versus silage and straw for beef cattle wintered outside; gains of young cattle on pasture; cost of raising beef bulls.

Sheep.—Four hundred and eight common grade ewes were mated on December 12, 1918, and the following table gives the lambing results:—

Breed of Ram Used	Total Number Ewes bred Dec. 12-18	Total Number Ewes in groups May 1-19	Total Number Dry Ewes	Total Number Live Lambs June 20,1919	Average Weight of Lambs Nov. 6-19.	Average Weight previous Crop Lambs Oct. 22, 1918
					Lb.	Lb.
Hampshire	75	71	8	51	60·8	66·4
Oxford	40	39	1	35	60·5	66·0
Cheviot	56	53	5	42	58·5	65·7
Leicester	68	66	4	58	56·4	62·2
Corriedale	46	42	5	33	54·4	60·5
Shropshire	50	50	2	45	51·7	59·4
Shropshire (original and black face ewes)	75	73	2	75	.....	.....
	410	394	27	329	.....	.....

The following table shows the grades and average weights of the fleeces clipped from the first cross shearling ewes in June, 1919:—

——	Fine Medium Staple	Fine Medium Clothing	Medium Staple	Medium Clothing	Low Medium Staple	Average weight per fleece
	(Fleeces)	(Fleeces)	Fleeces)	(Fleeces)	(Fleeces)	
Corriedale	7	2	5	2	2	5·93
Hampshire	5	3	12	10	1	5·3
Leicester	.....	.....	20	3	6	5·87
Oxford	4	9	4	12	.....	5·35
Cheviot	5	4	7	5	.....	5·21
Shropshire	7	4	1	4	.....	5·34
Original Shropshire	.....	12	5	6	Low clothing 2	4·57

Swine.—The hogs owned by this Station on March 31, 1920, numbered 76 head, composed of the following: Yorkshires, 20 sows and 2 boars; Berkshires, 26 sows and 2 boars; Duroc-Jerseys, 10 sows and 1 boar, and 15 feeder pigs.

The following table on the economy of gains with different breeds of hogs gives the four-year average on a total of over five hundred hogs:—

Breed	Average No. Pigs per per Litter	Pounds of grain required for 1 lb. pork	Dressing percentages for the Exp. of 1917 and 18
Berkshire	8·6	5·148	72·05
Yorkshire	10·4	5·153	74·63
Duroc-Jersey	8·7	5·706	74·47

Further work along this line is being done.

Experiments on the value of hog pastures in pork production have been conducted for a number of years. A pasture of oats or barley or a mixture of these grains can easily be established which makes them particularly well suited to the farmer who wishes pasture. Oats have carried fully 1,000 pounds more pork per acre than barley. Rape sown both broadcast and in drills has been used with excellent results. The hogs pastured on hardy Grimm alfalfa were thrifty, developed good bone, and finished

off at a good weight for market. The cost of producing pork on sweet clover was very high. For early pasture a small area of fall rye may be found useful. With the exception of the sweet clover pasture, the cost of pork production was highest when hogs were fed in a small coral. The suitability of good screenings as a hog feed has been demonstrated but the advantage from cooking them is not sufficient to pay for the fuel and extra labour.

Sixty brood sows of Berkshire, Yorkshire, and Duroc-Jersey breeding were carried at a feed cost of $3.90 per sow per month from November 15 to March 16.

POULTRY

Three breeds of poultry were kept: 173 White Wyandottes, 104 Barred Rocks, and 97 Rhode Island Reds, also 4 Toulouse and 5 African Geese, and 8 Pekin Ducks; 1,360 dozen eggs were produced at a cost for feed of 37·7 cents per doz. The average price received for the year was 45·7 cents per doz. It would appear from results of experiments that the use of electric light greatly stimulated egg production. As to whether this is sufficient to pay for the extra labour and cost of light is a subject for further test. Allowing for cost of eggs for incubation, fuel for incubators and brooders, and for feed use, 300 chickens were raised from hatching to maturity at a cost per head of 66·5 cents, or a cost per pound of 16 cents.

BEES

The dry summer of 1919 was not particularly suited to honey production since a number of plants failed to produce the usual abundant blossom. However, such a showing was made, that we feel warranted in saying that bees may profitably be kept as a side line on a great many farms in central Alberta. In the autumn of 1918, seven colonies were stored in the basement of the office in a dark room where uniform temperature was maintained by admitting heat from the furnace room when necessary. Two colonies died during the winter but the five colonies left threw off two swarms which were united, and six healthy colonies were put in the cellar in the fall of 1919. The largest production from any one hive was 115 pounds.

FIELD HUSBANDRY

Rotations.—Interesting data have been obtained from rotations now being conducted on this Station. The rotations being used are as follows: Rotation "C," 3 years' duration; Rotation "K," 6 years' duration; Rotation "O," 7 years' duration; Rotation "Main Farm," 6 years' duration.

Cultural Experiments.—Cultural experiments have been under way for seven seasons on over 450 plots, the data secured in this way are taken as a safe criterion of the method of cultivation suitable for districts such as Lacombe. Indeed in a great many cases, the results are applicable over all the western provinces. Some of the results of these experiments are given below.

The most economical depths to plough summer-fallow were found to be 6, 7, and 8 inches.

Fifty-one plots are used in a three-year rotation of summer-fallow, wheat and oats to determine the best method of summer-fallowing. Better yields were obtained by ploughing once for summer-fallow at a depth of 6 or 8 inches than by ploughing in the spring and again in the fall. A comparison of yields of plots ploughed May 15, June 15, and July 15, indicates the advisability of starting the summer-fallow work early.

Autumn ploughing of wheat stubble for wheat and oats at a depth of four inches has yielded six bushels and four pounds more than by discing the land. In drier climates we would advocate the disc to follow the binder to hold weeds in check.

We have found it advisable at this Station to use a nurse crop in seeding down grass and clover. In drier districts, the use of a nurse crop cannot be recommended. Barley is the best suited for a nurse crop when one is used, and as a good seed bed, well firmed, is necessary for grass seed we have found the best results to follow summer-fallowing or a well tilled root crop.

Results show that green manuring is a little better than straight summer-fallow treatment.

We generally find three inches to be a satisfactory depth to seed wheat and oats in this section of Alberta.

FORAGE PLANTS

Experiments were carried on with sunflowers but results obtained were not conclusive.

Grasses and Clovers.—Fifty-five grass plots seeded in 1917 and one seeded in 1918 gave very good returns of hay this year. The best yields of hay were from the plots in which alfalfa was grown, viz., alfalfa and timothy, alfalfa and western rye grass, alfalfa and meadow fescue and alfalfa and Kentucky blue grass. Brome grass also yielded well but has the disadvantage of being hard to hold in check. Kentucky blue grass is more suitable for a permanent pasture than for a hay crop.

CEREALS

Twenty-three varieties of spring wheat were sown in uniform test plots each one-fortieth acre in size, on April 19. Marquis wheat is yet the standard variety for all districts not subject to very early frosts. Ruby (Ottawa 623) is superior to Prelude as an early wheat as it is not subject to smut, yields better and is a grain of splendid milling value. Ruby can be expected to ripen five to ten days earlier than Marquis and will yield within three or four bushels as much per acre.

Spring rye does not have a special or important place in this district. Fall rye is one of the most useful crops that can be grown, especially under arid conditions or when the soil is liable to blow.

Of the twelve varieties of oats under test, Banner was the highest yielder. This variety is recommended for the greater portion of central Alberta. Victory oats take second place in the list of five-year averages. Daubeney is one of the leading early varieties while the new hulless oat, Liberty (Ottawa 480), is a very satisfactory variety of this sort. In 1919 Liberty yielded at the rate of 1,400 pounds per acre which was slightly lower than usual.

Twenty varieties of barley were tested and Manchurian and O.A.C. No. 21 are the two most suitable sorts for central Alberta. Albert (Ottawa 54) is a very early sort that is useful in combating wild oats as it can be harvested before the oats have ripened.

An experiment was carried on to determine the value of cross sowing of wheat, oats and barley and results showed that no benefit can be expected from this practice.

Of the five varieties of peas grown, Chancellor, Solo and Arthur gave the highest yields in order of merit.

HORTICULTURE

Fruit.—Owing to the fact that the land was not in the best of shape, the old apple orchard which was discarded in 1918 was not replanted. It is the intention, however, to plant out the strongest and most promising of a number of seedlings received from Ottawa in 1915. Some Manitoba plum seedlings planted a few years ago

in the nursery bore fruit for the first time this year. Black currants did exceptionally well but red and white currants, raspberries and strawberries were not as productive as in previous years. Climax, Black Naples, Eagle, Red Grape and Pomona red currants were leaders in yields. Houghton gooseberries, Herbert raspberries and Senator Dunlap and August Luther strawberries were the highest producers in these sorts of fruits.

Vegetables.—Variety and cultural tests were carried on with vegetables as usual. The season was not very favourable for carrots, celery, parsnips and peppers. Average results were obtained from beets, cabbage, corn, cucumbers, peas, radish, salsify and turnips. Beans, lettuce, onions, pumpkins, squash and tomatoes gave excellent crop returns. Seed growing, fertilizer experiments and cultural experiments with potatoes were conducted. The usual variety tests with potatoes were carried on and good results were obtained.

Trees, Shrubs and Flowers.—Annual and perennial flowers made a splendid display of bloom. It was found that the peony and iris are both perfectly hardy. The salpiglossis, an annual, gave an abundance of bloom. The shrubs came through the mild winter of 1918-19 in good condition. The spruce and pine trees continue to make good progress. Russian and black poplars appear to be suitable for this district. Among the best hedges are the laurel-leaved willow, Caragana arborescens, native spruce, Syringa villosa and the Murray pine. In spite of the lack of rain the growth of grass was sufficient to add much to the beauty of the surroundings.

EXHIBITION AND EXTENSION WORK

No exhibition work was done during the year, owing to the pressure of work at the Station. Besides judging a number of standing crops in the Millet district, judging at the Lacombe Seed Fair, and addressing three local farmers' meetings during the year, no extension work was done.

EXPERIMENTAL STATION, SUMMERLAND, B.C.

REPORT OF THE SUPERINTENDENT, R. H. HELMER

THE SEASON

The past season has been most unfavourable to plant growth. The rainfall in the spring months was only 1·83 inches and owing to the municipality enlarging and cementing the main ditch from Trout creek, water was not available until May 15. The spring was very cold and crops did not start well. Water was not as plentiful as it should have been during the season. The months of July and August were very dry and hot and had a bad effect on plants. Many orchards in the district were seriously set back. In some districts leaves fell and the fruit shrivelled on the trees. Yields have been very low in almost all hoed crops. The potato yield throughout the district has been very poor and it is almost impossible to get good seed potatoes. The late spring, and the early frosts which occurred early in October greatly reduced the yield of tomatoes, melons and similar crops. The apple crop which was by far the largest in the history of the Okanagan was reduced by being frozen on the trees. Car and box shortage was partly to blame for this, but growers who took the advice given, and picked their apples and put them under the trees and covered them with straw, hay, or sacks, did not lose an apple. The winter has been steadily cold, the lowest recorded temperature being 5 degrees below zero in December. Very little ploughing has been

done and spring work will have to be rushed. The nights have been cold during the months of February and March with sunshine during the days. This has had the effect of drying out the land very materially, the precipitation during those months being very light—.34 inch rain, 1.5 inches snow.

METEOROLOGICAL RECORDS

Month	Temperatures			Rain	Snow	Sunshine
	Maximum	Minimum	Mean			
1919	°	°	°	Inches	Inches	Hours
April	68·00	28·00	48·06	0·54	.....	191·4
May	78·00	33·00	55·89	0·71	.....	207·4
June	91·00	37·00	60·14	0·58	.....	252·7
July	100·00	46·00	69·77	0·34	.....	353·8
August	93·00	51·00	68·83	0·34	.....	282·2
September	77·00	34·00	57·41	1·00	.....	221·5
October	69·00	20·00	43·66	0·61	0·5	134·2
November	53·00	9·00	32·41	0·15	19·35	51·4
December	51·00	—5·00	23·95	0·11	0·60	61·6
1920						
January	57·00	5·00	24·68	0·29	13·5	45·4
February	46·00	18·00	30·70	.....	0·3	163·2
March	57·00	18·00	38·11	0·34	1·2	117·8
Totals	.....	.....	.....	5·01	35·45	2,082·6

LIVE STOCK

Horses.—We have seven horses on this Station, three work-teams and one driver. All are in good condition.

Cattle.—Experiments in steer feeding were again carried out. Twenty-five steers were brought from Calgary and two pens were fed alfalfa hay and straw, two other pens were fed alfalfa hay, straw and corn silage and another two pens were fed straw and corn silage. They all received the same grain ration. Silage gave such good results in the two pens in which it was used that we started feeding silage to the others, and these immediately showed better gains. The steers are the best we have fed and the better quality of the steers is reflected in the gains they have made.

Sheep.—We had 20 breeding ewes from which we got 35 lambs and not one of the lambs suffered from goitre. The ewes were fed two grains of potassium iodide daily in their grain. The lambs were remarkably strong and with the exception of one or two which were weaned too soon, made good growth.

Swine.—We had four brood sows which gave us 20 pigs in the spring and 10 in the fall. In every case where pigs were weaned too early they were retarded in their growth. Pigs were all brought up on alfalfa pasture supplemented with grain. We had four pens under feeding tests. At the present time we have eight brood sows.

POULTRY

Our laying stock consists of 212 White Wyandottes, with 15 adult males, 4 Bronze turkeys, 5 Pekin ducks and 10 Indian Runner ducks. In the spring of 1919 only fair success was obtained in the hatching of chicks, and the pullets did not mature as rapidly as they should have done. Trap-nesting is being carefully carried out and this year we have pens of pedigreed birds with good records from which we hope to build up our flock of heavy layers.

BEES

In the spring of 1919 we had three colonies of Italian bees. During the first honey flow these did well but owing to the very dry weather very little nectar was gathered later in the year. The best hive which we kept on the scales produced a surplus of 132 pounds. During the spring we purchased one 1-pound package and one 2-pound package of bees; these built up during the season and produced 42½ and 55 pounds surplus honey respectively.

FIELD HUSBANDRY

No definite policy has yet been laid down for field husbandry and the benches on this Station are hard to get into a suitable rotation. We are now hoping to put our alfalfa fields and corn land into a seven-year rotation if possible.

CEREALS

All cereals gave small yields on this Station, the water being turned on so late that the grain had started to head before we were able to irrigate it. Straw was very short in consequence, grain was very small and shrivelled and yields were low. The dry farm crops were total failures, nothing being harvested. Beans, which was the hoed crop in the rotation, gave a very small yield. Clover and timothy seeded with grain did not grow at all, the paths and roads being the only places where it grew.

FORAGE PLANTS

The Division of Forage Plants has made good progress during the year. Variety tests were again taken up in mangels, carrots, corn, various perennial and annual grasses and other plants such as thousand headed kale, Swiss chard, etc. These we hope to have under a rotation this coming year. Our seed work was again continued and this division has been of much assistance to the farmers of this district who have gone into seed growing on a small scale, and many farmers have come to see the seed crops at different times from planting to harvesting. We have also carried on experiments to find out the best method of planting alfalfa for seed and will carry this on further and on a bigger scale next year. Our root crops are now on a four-year rotation with barley as the grain crop for hog feed and alfalfa as the hay crop. Early frosts interfered greatly with the yields of roots and many were frozen in the ground.

HORTICULTURE

Fruits.—All trees did fairly well this year, but they did not make as much growth as the previous year owing to a shortage of water. The stone-fruit orchards did better this year than before as they got much better attention, an extra man being on orchard work. We had fruit on several of the trees this year, including some of the Ottawa seedlings.

Vegetables.—All hoed crops such as tomatoes, melons, etc., were not as good as usual owing to the late spring and early frosts in the fall. Selections in peppers, tomatoes, cucumbers and cabbage were again made and some good seed procured. This work will be continued next year and should prove of value to our seed growers.

Flowers.—The flower gardens were not as good as usual and seed work in connection with flowers was not as successful as many of the flowers were cut off by the early frosts before maturing seed.

FERTILIZER EXPERIMENTS

This year the work in this division has been confined to tests with fertilizers applied with and without barnyard manure, the object being to gain data on the best sources of nitrogen under irrigation conditions. These experiments were conducted on eight plots of corn for silage, which included two check plots. These results were interesting but in no way conclusive; one of the check plots giving the largest yield. Experiments were also carried out in mangel seed production with and without manure.

BUILDINGS AND IMPROVEMENTS

New flumes have been built and several new measuring boxes installed. A boarding house with sleeping accommodation for about a dozen men, and a foreman's cottage, have been erected. The latter building will be temporarily occupied by the Superintendent. A log building has been built near the flower garden as an accommodation for visitors. This will be fitted up with a kitchen with facilities for boiling water, etc., and will no doubt be greatly appreciated by the many parties who come here for picnics during the summer. A good deal of work has been done on the roads during the past winter, grading, widening and shaling.

EXHIBITIONS AND MEETINGS ATTENDED

This Station had an exhibit at the following fairs: Kamloops, Armstrong, Kelowna, Peachland, Pentieton, Naramata, Summerland, the New Westminster Provincial Fair, where we had a good display of home-grown seed, and at the Provincial Seed Fair held in Kamloops in January. The Superintendent attended the Irrigation Convention at Medicine Hat, several meetings connected with the seed growers of the province, and Farmers' Institute meetings at many of the towns in the district.

VISITORS

Each year shows a marked increase in the number of visitors to this Station. On May 24 we had a "get together" day and we had visitors from all the towns in the South Okanagan; it was estimated that 1,500 people visited the Station on that day. Members of neighbouring Farmers' Institutes have spent days on the Station and numerous parties have been shown over the Station.

EXPERIMENTAL STATION, INVERMERE, B.C.

REPORT OF THE ACTING SUPERINTENDENT, R. G. NEWTON, B.S.A.

THE SEASON

The weather was extremely fine during April, and the soil was in fair condition so that spring seeding was practically finished by the 1st of May. During the latter part of May and early June the weather was quite cool and several frosts were recorded the hardest being on the 1st of June, when the thermometer registered five degrees. Toward the end of June and during July some very warm weather was experienced and it was necessary to irrigate the crops continually. Early in August the only heavy rain of the year occurred which brightened things considerably and brought the crops along to harvest.

Harvesting was completed under favourable weather conditions, and we were particularly fortunate in having the potatoes up when the heavy frost came the end of September. Practically all fall ploughing was completed before the freeze-up, early in November. Extremely cold weather was experienced during the first two weeks of December, the thermometer registering around thirty below zero most of the time. The snowfall this winter has been the heaviest since records were commenced in 1914. On the whole the various months of the past year have been characterized by extremes in one way or the other, as is readily noted in the following tables.

METEOROLOGICAL RECORDS

Month	Temperatures			Rain	Snow	Sunshine
	Maximum	Minimum	Mean			
1919	°	°	°	Inches	Inches	Hours
April	74	22	42·9	0·25	.....	199·0
May	83	25	49·3	0·84	0·12	209·7
June	92	30	56·26	0·60	.....	316·8
July	94	36	60·58	0·33	.....	312·2
August	89	35	60·55	2·42	.....	269·5
September	78	18	50·68	0·69	.....	203·6
October	70	6	35·24	0·48	2·25	121·3
November	53	−10	22·3	0·20	4·37	53·2
December	45	−34	12·85	0·11	9·12	71·3
1920						
January	42	−25	12·75	0·18	20·25	54·2
February	41	− 9	19·24	0·07	3·0	153·7
March	53	−10	27·55	0·06	6·12	157·3
Totals	.....	.....	37·52	6·23	45·23	2,121·8

PRECIPITATION, 1914-1919

Month	1914	1915	1916	1917	1918	1919
	Inches	Inches	Inches	Inches	Inches	Inches
April	1·25	1·14	0·62	0·23	0·39	0·25
May	1·46	1·01	2·89	2·85	0·93	0·85
June	1·59	3·92	2·01	1·96	0·36	0·60
July	1·57	3·79	2·32	0·29	1·32	0·33
August	0·75	0·67	2·01	1·20	3·23	2·42
September	2·16	0·72	1·15	0·75	0·85	0·69
October	0·77	0·90	0·54	0·41	1·12	0·70
November	0·79	0·90	0·33	0·38	0·53	0·64
December	0·42	0·58	0·30	2·59	1·53	1·02
	1915	1916	1917	1918	1919	1920
January	0·51	0·44	0·15	1·96	0·98	2·20
February	0·30	1·22	0·36	1·22	0·83	0·37
March	0·03	0·45	0·18	0·35	0·65	0·67
Totals	11·60	15·74	12·86	14·19	12·72	10·74

Average for six growing months, April-September	5·14
Average for six years	12·97
Average for six years for six growing months—April-September	10·64

MEAN TEMPERATURES, 1914-1919

Month	1914	1915	1916	1917	1918	1919	Average 6 years
	°	°	°	°	°	°	°
April	43·84	47·01	42·30	37·93	41·85	42·9	
May	51·98	52·07	46·55	50·25	47·76	49·3	
June	56·91	56·21	55·95	53·80	58·58	56·26	
July	64·48	60·30	64·48	64·40	62·87	60·58	
August	60·72	65·07	59·45	60·30	58·38	60·55	
September	49·78	49·51	49·66	51·53	55·28	50·68	
October	41·77	43·91	39·20	40·50	43·20	35·24	
November	30·68	24·33	22·05	32·05	28·83	22·30	
December	11·70	21·12	5·05	15·50	20·06	12·85	
	1915	1916	1917	1918	1919	1920	
January	13·12	4·79	12·35	14·70	19·76	12·75	
February	25·73	17·50	14·30	13·52	17·00	19·24	
March	33·12	32·90	22·40	30·50	28·11	27·55	
Totals	40·32	39·56	36·14	38·76	40·14	37·52	38·74

SUNSHINE RECORDS, 1914-1919

Month	1914	1915	1916	1917	1918	1919	Average 6 years
	Hours	Hours	Hours	Hours	Hours	Hours	Hours
April	165·1	208·7	182·5	168·9	261·9	199·0	
May	237·1	168·0	179·1	227·0	241·0	209·7	
June	198·4	187·7	202·0	230·2	302·1	316·8	
July	314·5	211·4	271·1	365·1	304·0	312·2	
August	267·9	269·9	269·0	300·4	214·0	269·5	
September	148·3	151·8	192·2	142·9	232·4	203·6	
October	86·7	124·7	159·2	147·2	125·0	121·3	
November	56·4	59·0	84·6	23·7	89·9	33·2	
December	86·8	43·4	84·4	38·2	28·4	21·3	
	1915	1916	1917	1918	1919	1920	
January	46·0	99·0	80·1	44·1	39·6	34·2	
February	70·9	97·8	99·8	80·9	79·2	153·7	
March	175·8	131·7	143·7	141·7	167·5	157·3	
Totals	1,853·9	1,763·1	1,947·7	1,910·3	2,085·0	2,121·8	1,945·4
Total daily average	5·1	4·8	5·3	5·2	5·7	5·8	

LIVE STOCK

Horses.—Three horses are kept at the Station, one work team, and one driver.

Cattle.—At present the herd consists of two milch cows and a registered Shorthorn bull. The latter is used by some of the local ranchers.

Swine.—Three Berkshire sows and one hog comprise the swine at the Station. Data are being collected on the cost of wintering brood sows, and some interesting figures will be available by another year.

POULTRY

The Farm flock at the present time consists of 150 Barred Rocks, 30 White Wyandottes and 11 Bronze turkeys. The results from the trap-nesting during the past year have been very encouraging.

A small pen of White Wyandottes averaged 227·7 eggs per bird, at a cost of $4.51 for feed, and show a net profit of $6.32 per hen. A pen of 50 Rocks averaged 146·1 eggs per hen at a cost of $3.31 for feed, and show a profit of $3.45 per hen.

Incubation.—The hatching records for the season were quite satisfactory. Of the 1,371 eggs set, 1,117 were fertile and produced 688 chicks; 508 of these were alive July 1, some died, others were cripples and were killed, and hawks accounted for not a few. This works out that for 2 eggs set 1 chick was hatched, and 2·7 eggs were required for every chick alive July 1.

Two makes of incubators were tried out, the Prairie State and the Cyphers, and equally good results were obtained.

With the various breeds some interesting figures were obtained. White Wyandottes required 2·7 eggs to produce a chick, Barred Rocks, 2·1, and White Leghorns, 1·5. In testing out hen eggs vs. pullet eggs for setting, it was found that it took 1·8 hen eggs to produce a chick, while 2·3 pullet eggs were required.

Various fattening trials were conducted last fall, ranging from 11 to 24 days. The average increase per bird was 14·2 ounces, produced at a cost of 13·7 cents per pound. The average profit per bird due to increase was, for crate-fed birds, 28·1 cents and for pen-fed birds 27·9 cents.

Thirty-four turkeys were raised last season and all but six were sold for breeding and eating.

The demand for setting eggs and young stock is steadily increasing and the Station cannot begin to fill the orders that are received.

BEES

The apiary numbered ten colonies in the fall of 1918. Two of these were wintered in the cellar, four in a trench, two in a double wintering case, and two in single wintering cases. The bees wintered outside proved by far the strongest in the spring, while three of the colonies wintered in the trench died as the result of too much moisture. From the seven colonies that were left 885 pounds of extracted honey were produced, or an average of 126·4 pounds per colony, the strongest colony producing 234 pounds of honey in the season. The total value of honey was $292.05, or the average value per colony was $41.72. The number of colonies were increased from seven to eleven and in September they were fed 180 pounds of sugar. Seven of the colonies were wintered in Kootenay frames and four in a wintering box. When they were examined toward the end of March, it was found that they had all come through the winter and most of the colonies were strong.

FIELD HUSBANDRY

Rotations.—On the irrigated portion of the Station the three-year, four-year and five-year rotations were continued with fair success. The cereals were inclined to be uneven in growth and gave only fair returns. Peas did remarkably well, but the plots of mangels were poor, due to the cutworms and poor germination. Two applications of poisoned bran mash were applied with only fair results. Clover fits well into the rotations and gave very good returns, but is apt to winter-kill some years. Potatoes continue to give excellent yields and as a money-making crop are hard to equal.

The six-year rotation on the dry land was a complete failure, which again goes to show that irrigation is essential to this district.

The following is a list of rotations under test:—

Rotation "A".—Hoed crop (roots), wheat, peas, oats.

Rotation "B".—Wheat, roots, oats seeded to clover, clover, clover.

Rotation "J".—Oats seeded to clover, clover, potatoes.

The following table shows the cost, the returns and the profit per acre for the above rotations, at current prices:—

Rotation	Duration	Cost per acre	Returns per acre	Profit per acre
	Years	$ cts.	$ cts.	$ cts.
"A"	4	42 22	115 75	73 53
"B"	5	32 64	68 45	35 81
"J"	3	50 25	283 09	232 84

IRRIGATION WATER RECORD

The following irrigation chart for the past six years on Rotation "A" may be of interest, especially as it shows that this past season has been rather abnormal in regard to precipitation.

IRRIGATION CHART 4-YEAR ROTATION "A"

—	Total precipitation for year	Total precipitation 4 months April-July	Acre-inches used on roots	Acre-inches used on wheat	Acre-inches used on peas	Acre-inches used on oats	Total for year
1914	12·91	5·87	12·78	9·27	11·40	5·89	9·83
1915	14·47	9·86	2·03	5·04	5·84	6·73	4·91
1916	14·28	7·84	1·62	Nil	3·52	Nil	1·31
1917	11·70	5·33	5·75	7·55	9·69	4·14	6·78
1918	13·79	3·00	18·30	9·91	9·57	11·38	12·29
1919	10·74	2·03	6·12	13·17	10·04	7·46	9·19
Average amount of water used per acre, in acre-inches			7·77	7·49	8·34	5·93	7·38

FERTILIZING EXPERIMENT

A fertilizing experiment was commenced this year to run through a three-year rotation viz.—Potatoes, oats and clover.

The object of this test was, first, to ascertain the effect of omitting in turn each element of plant food from a fertilizer mixture, and second, to ascertain the relative influence under irrigation of nitrogen in various forms.

The following table summarizes the results with potatoes this past season. Wee Macgregor potatoes were used as seed. They were seeded May 16 and harvested September 30. The plots were irrigated June 14 and August 26.

Plot	Manure	Quantity per acre	Yield in tons per acre	
		Lbs.	Tons	Lbs.
1	No manure	.....	19	400
2	Acid phosphate	500		
	Muriate of potash	160	17	480
3	Sulphate of ammonia	160		
	Muriate of potash	160	17	800
4	Sulphate of ammonia	160		
	Acid phosphate	500	20	400
5	Acid phosphate	500		
	Sulphate of ammonia	160		
	Muriate of potash	160	19	600
6	No manure	.....	18	160
7	Barnyard manure	15 tons	21	1,600
8	Sulphate of ammonia	80		
	Acid phosphate	250		
	Muriate of potash	80		
	Barnyard manure	10 tons	19	400
9	Nitrate of soda	210		
	Acid phosphate	500		
	Muriate of potash	160	17	
10	Dried blood	280		
	Acid phosphate	500		
	Muriate of potash	160	21	1,440

CULTURAL EXPERIMENTS

The cultural test with oats is proving very interesting and shows quite conclusively the value of barnyard manure as a fertilizer, and clover as a green manure. The following table shows the yields from the various plots for the past three years.

CULTURAL EXPERIMENT WITH OATS

Detail	Yields			
	1917	1918	1919	3 year average
	Bush.	Bush.	Bush.	Bush.
Oats continuously manured 12 tons per year	40·7	25·4	85·3	50·4
Oats seeded to clover, and clover ploughed in	25·4	23·3	67·8	38·8
Oats—summerfallow	38·4	13	54	35·1
Oats continuously	34·7	22·5	43·5	33·5

FORAGE CROPS

Clover and Alfalfa with Grass Mixtures.—An experiment was commenced in 1917 to compare the results of various mixtures of grasses sown with clover, with similar mixtures sown with alfalfa, for hay. The plots were seeded June 15, 1917, and no crop was taken the first year, but the plots were cut over once and a few inches of growth left on the plot. The plots were irrigated when necessary and two cuttings have been taken each year for the past two years. So far the clover and grass mixtures outyielded the alfalfa and grasses, while in some of the plots the alfalfa has crowded or smothered the grass nearly out. It would appear therefore that the clover and grasses are better adapted for a hay mixture than alfalfa grasses. The following table summarizes the experiment to date:—

Alfalfa and Grass Mixtures					Red Clover and Grass Mixtures				
Plot No.	Mixture	Weight seed sown per acre	1918 Total yield hay per acre (2 cuts)	1919 Total yield hay per acre (2 cuts)	Plot No.	Mixture	Weight seed sown per acre	1918 Total yield hay per acre (2 cuts)	1919 Total yield hay per acre (2 cuts)
		Lbs.	Tons	Tons			Lbs.	Tons	Tons
1	Alfalfa	10	4·6	5·87	1	Red clover	10	5·13	5·88
	Timothy	8				Timothy	8		
2	Alfalfa	10			2	Red clover	10		
	Western rye	10	4·62	5·46		Western rye	10	6·88	5·88
3	Alfalfa	10			3	Red clover	10		
	Meadow fescue	15	5;00	5·28		Meadow fescue	15	6·9	5·79
4	Alfalfa	10			4	Red clover	10		
	Orchard grass	15	4·65	4·74		Orchard grass	15	6·12	6·15
5	Alfalfa	10			5	Red clover	10		
	Tall oat grass	15	3·6	3·54		Tall oat grass	15	5·91	6·21
6	Alfalfa	10			6	Red clover	10		
	Timothy	2				Timothy	2		
	Western rye	3				Western rye	3		
	Meadow fescue	3½				Meadow fescue	3½		
	Orchard grass	3½				Orchard grass	3½		
	Tall oat grass	3½	5·16	3·51		Tall oat grass	3½	6·63	6·12
7	Alfalfa alone	12	4·41	3·94	7	Red clover alone	12	5·94	4·9

Alfalfa.—Alfalfa as a permanent crop is steadily increasing in favour in this district. It is not so liable to winter-kill as clover and produces two fine cuttings, running from three to four tons per acre. This season six acres of new land was seeded to alfalfa late in July and by fall there was a fine stand. This appears to have come through the winter without injury.

Soiling Crops.—Experiments were continued with rape, Thousand Headed kale, and Swiss chard. These yielded in the order named, but the results were not quite so good as in previous years.

Roots.—This past season the ordinary variety tests were enlarged, embracing 37 varieties of mangels, and 29 varieties of carrots. This was done in order to ascertain the purity of the various strains, from different seed houses. Seed grown on the Experimental Farms System proved to be more true to type and gave higher yields than seed obtained from the seed houses. Giant Yellow Intermediate (Ottawa) was the best yielding mangel, and the White Intermediate carrot (Summerland) proved the best carrot.

Sugar Beets.—Tests were continued with the following sugar beets: Wohanka, Chatham, B. C. Grown, and Waterloo. The yields were in the order named.

Corn.—Eight varieties of corn were seeded this season on June 28, and harvested on September 1. The yields varied from 14 tons 200 pounds to 19 tons 1,200 pounds per acre. Wisconsin No. 7 gave the highest yield, with Canada Yellow following. Most of the corn when cut was in the late milk or dough stage, and a few cobs were found on each variety.

CEREALS

With the cereals a five-year rotation is followed, viz., peas ploughed under, cereals seeded to clover, clover, second crop ploughed under, peas (seed), cereals. The following is a summary of the various grains grown this past year:—

Wheat.—Four varieties were under test, Huron, Marquis, Kubanka and Ruby, and the yield was in the order named.

Oats.—Banner, Daubenay and Liberty were tried out this past season. Banner yielded at the rate of 101 bushels to the acre. Liberty was very poor, considerable smut being present.

Barley.—Four varieties were tested which yielded in the following order: Gold, Guymalaye, Manchurian and Success. An interesting side experiment was conducted with Success barley. One plot was cut for green feed on June 28, irrigated and forced into second growth and left to mature, with the following results:—

Plot 1 yielded 2,200 pounds of grain per acre.

Plot 2 yielded 2·6 tons of green feed and 1,280 pounds of grain.

This experiment will be continued and the green feed analysed to ascertain its feed value.

Peas.—Remarkable yields were obtained with peas this past season. As yet no sign of mildew, weevil or aphis has been noticed. More attention should be given this crop as it is easy to harvest and a money-maker. The following list gives the varieties and their corresponding yields:—

	Bush.	Lb.
Prussian Blue	89	20
Solo	70	..
Arthur Select	67	20
Chancellor	67	20
Golden Vine	60	..
Average for all varieties	70	48

HORTICULTURE

The season was on the whole unfavourable. The spring was cold and frosts were experienced up to June 7. On the 1st of June a frost of 5 degrees killed most of the tender vegetables and the hardier varieties had a decided setback. Cold drying winds prevailed until July and vegetation made but very little growth.

Potatoes.—Although the season was bad, potatoes did very well and the variety tests showed some very satisfactory yields.

	Yield per acre Tons	lb.
Wee McGregor	25	1,480
Ashcroft	25	160
Eureka Extra Early	23	1,896
Cambridge Russett	23	992
Snow	22	1,936
Delaware	21	1,560
Early Northern	21	1,296
Suttons Abundance	20	1,976
Carman No. 1	20	1,184

These varieties of potatoes were planted May 17 and harvested September 29. They were quite free from disease with the exception of a little scab. Water was applied three times during the season.

Beans.—Beans were a fair crop, but the first seeding was destroyed by the severe frost the first of June, with the exception of Plentiful French, which survived and yielded a medium crop. The second seeding on June 1 was attacked by red spider, which seriously affected the crop.

Beets.—Beets sown April 28 gave heavy yields, but this date is too early to produce beets for winter storing. A later seeding on July 22 yielded roots up to 3 inches in diameter by September 20.

Cabbages.—It was a very trying season for the cabbages. The cold of May and June crippled the seedling plants and during the remainder of the growing season they were attacked by cutworms, larvæ of the moth and butterfly, and aphis. Best results were obtained from Early Jersey Wakefield, Copenhagen Market and Improved Brunswick. The Chinese cabbage proved very useful as an early vegetable.

Cauliflowers.—Only fair results were obtained with cauliflowers this past season.

Carrots.—Carrots suffered badly from the cold spring, which affected the germination and resulted in a poor stand.

Cucumbers, Melons and Citrons.—It has now been pretty well demonstrated that these plants are too tender for climatic conditions in this valley.

Corn.—Good yields of corn were procured from some of the earlier varieties such as Early Malakoff, White Alberta, Nordheim Extra Early, and Early Malcolm.

Lettuce.—Lettuce was a good crop especially Hanson, Giant Crystal Head, Trianon Cos. and Grand Rapids.

Onions.—Onions were a poor crop being badly infested with maggots.

Parsley and Parsnips.—These did very well, especially Improved Hollow Crown C.E.F. parsnips.

Peas.—Peas do remarkably well in this district. The early sown seed suffered from the frost and germinated poorly. Thos. Laxton was the earliest, being six days ahead of Gregory's Surprise.

Tomatoes.—The tomato plants were very late this year and for this reason were grown on single stem and stopped at second truss. Alacrity, Langdons Earliana, and Bonny Best proved the best.

Small Fruits.—Gooseberries were the best of the small fruits this season, Oregon Champion averaging 20 pounds to the bush.

With the red currants, Fays Prolific produced 20 pounds per bush and Perfection 11 pounds.

Black currants were not so good this year having been too heavily pruned the preceding year.

Tree Fruits.—A few of the apple trees came into bearing this year, and the following varieties promise well for this district: Wealthy, Yellow Transparent, Rupert, Dudley, Okabena, and Pinto.

Hyslop and Transcendent crabs gave a large yield.

The fruit was very clean with no trace of scab or fungous diseases.

Flowers.—A limited display of annuals was made this year. Antirhinums, asters, stocks, and various hardy annuals were chiefly used, and they made a bright showing.

Hedges.—Various hedge plants are being tested out and on the whole those indigenous to the locality prove best, Douglas fir, spruce and juniper excelling. Introductions from outside are the Lance-leaved willow, and the Caragana.

EXHIBITIONS AND MEETINGS ATTENDED

The Station exhibit was shown at the following fall fairs: Kaslo, Nakusp, Trail, Nelson, Creston, Cranbrook, and an exhibit of Farm produce was shown at Athalmer. The exhibit aroused a great deal of interest, and that it was appreciated was shown by the large number of inquiries made, and circulars distributed.

The Superintendent attended Creston, Athalmer and Cranbrook fairs, and at the latter judged live stock, poultry and dairy products.

During the year the following meetings or conventions were attended: Western Canada Irrigation Convention, Medicine Hat; District Farmers' Institute meeting at Cranbrook, and most of the local meetings in connection with the Agricultural Association, Stock Breeders' Association, and Board of Trade.

EXPERIMENTAL FARM, AGASSIZ, B.C.

REPORT OF THE OFFICER-IN-CHARGE, W. H. HICKS, B.S.A.

THE SEASON

The total precipitation of 76·16 inches for the year 1919-20 was larger than average but was 2·44 inches less than that of the preceding year. The months of April and May were cool, damp and cloudy, resulting in a late spring. Very little work was accomplished on the land in April and when the seed was finally sown, the cool temperature retarded growth. Up to the end of June hay and pasture crops did remarkably well under these conditions, but cereal, corn, root and potato crops were late. July and August were very dry and, although the first crop of hay yielded exceptionally well and was saved in good condition, the second crop of hay and late summer pastures were poor. The cereal crops ripened too rapidly for heavy yields. September was very dry with the exception of two rains which occurred about the 12th and 28th. These rains helped the pastures and gave the root crops a new start but were too late

to be of much benefit. October goes on record as being the coldest October known here. A large percentage of corn in the Fraser valley was frozen during the first week. The middle of the month was damp, cool and cloudy. On the 23rd another sudden change took place. Very strong winds blew from the north and frosts occurred during the nights. The climax was reached on the 26th when the wind calmed down and twelve degrees of frost were recorded. November was the wettest for ten years. December and January were about normal, while February was exceptionally mild, dry and bright. Some ploughing was done in February and March. The latter month had average weather conditions.

METEOROLOGICAL RECORDS

Month	Max. Temperature					Precipitation			Sunshine hours
	Date	Degrees	Date	Degrees	Mean	Rain	Snow	Total	
1919		°		°	°	Inches	Inches	Inches	
April	30	71	8	30	49·49	6·26	.....	6·26	120·0
May	22	78	3	32	52·06	4·71	.....	4·71	156·6
June	18	86	7	35	57·73	2·68	.....	2·68	152·8
July	14	92	18	44	64·49	0·66	.....	0·66	253·3
August	10	86	23	46	63·85	0·45	.....	0·45	191·5
September	14	86	28	32	60·98	6·7	.....	6·7	148·2
October	6	68	27	20	46·11	5·9	.....	5·9	116·5
November	20	53	26	25	41·09	15·31	3	15·61	28·2
December	28	54	13	8	34·65	8·93	7	9·63	75·4
1920									
January	14	52	21	18	36·21	13·98	11	15·08	53·8
February	29	56	14	26	40·20	2·04	.....	2·04	143·6
March	22	61	1	26	43·06	6·44	.....	6·44	88·2
						74·06	21	76·16	1,528·1

LIVE STOCK

Horses.—A very nice group of Clydesdale females is being collected on the Agassiz Farm. This group consists of four mature mares, three yearling fillies and one filly foal. The young animals in particular are nice individuals. Ten grade horses and a driver are also kept. No experimental work of any kind was attempted with the horses, but figures are being compiled on the cost of raising and maintaining horses.

Cattle.—The size of the dairy cattle herd has been slightly reduced during the year. The policy has been to dispose of the grade cows not required in the grading experiment, as the pure-bred herd is now sufficiently large to allow us to dispose of all the grades. At the close of the year the herd numbers seventy-two head; forty-nine of these are pure-bred and twenty-three grade Holsteins. A young bull sired by Freind Hengerveld DeKol Butter Boy from a daughter of Pontiac Aaggie Korndyke was selected for a herd sire. He is developing into a good bull. Further tests for tuberculosis failed to locate the disease in the herd, which has now been clean for seven years.

Of the twenty-seven cows which finished a lactation period during the year fifty per cent gave heifer calves. The average milk production for these twenty-seven cows is 10,198·9 pounds for an average lactation period of 342 days. This is an average increase per cow of over one thousand pounds of milk more than any previous year. This is a good average considering that eight of the records were made by two-year-old heifers. The best record was made by Agassiz Segis May Echo as a junior two-year-old. She produced in the year 19,302 pounds of milk and 842·5 pounds of butter. The two-year-old cow, Agassiz Pietje Priscilla Korndyke, produced 13,956

pounds of milk and 570 pounds of butter, while her full sister, Agassiz Priscilla Korndyke, as a three-year-old gave 18,731 pounds of milk and 822·5 pounds of butter. By making this record Agassiz Priscilla Korndyke won first prize in the three-year class of the Holstein Record of Performance. Her sister, Agassiz Pietje Korndyke won first in the four-year-old class and Aurora Mechthilde won seventh in the mature class with their records as shown in our last report. With these records the herd won more Record of Performance prize money than any other herd in Canada.

Not only was the production of the herd of a high standard but laurels were won at Vancouver and Westminster Exhibitions in competition with the best herds in the province. At Vancouver the most important winnings were: For bulls, two years, second; junior yearling, first; junior calf, first; and for females: mature cows, second; cow with record, second; cow, three years with record, first; aged herd, second; two animals produce of cow with a yearly record, first and third; three animals get of sire, second; the latter in a very strong class of twenty-seven animals. At New Westminster Exhibition the placings secured were, bull, junior yearling, first and second; cows two years, second; senior yearling, second; senior calf, second; aged herd, second. Agassiz Pietje Korndyke won first in the mature cow class and also grand championship. She also won the milk and butter tests at both Vancouver and Westminster Exhibitions.

In experimental feeding work turnips produced more milk and butter than mangels, when pulped and mixed with silage and straw. In comparing crushed barley with crushed screenings the former produced more milk and butter, but figuring barley at $72 per ton and screenings at $45 per ton, actual cost, the latter gave the cheaper product. By adding skim-milk to a small quantity of whole milk and feeding more grain, greater and cheaper gains were made with growing calves than feeding smaller quantities of whole milk.

Dairy.—A considerable portion of last year's dairy work consisted in giving instruction in elementary dairying to returned soldiers. Each group of men spent three days in the dairy and were given brief, practical and theoretical instruction in the care of milk, butter, cream cheesemaking and milk testing.

The regular shipment of cream cheese to Vancouver was maintained, the total for the year being 4,403 pounds. During the months of March to July, inclusive, Stilton cheese was made weekly and this was all marketed at 40 cents per pound. The manufacture was recommenced at the beginning of February, 1920. The year's milk testing comprised seven-day records for nine cows and one thirty-day record as well as the usual weekly test for the herd. Samples were also tested for farmers in the province who cared to avail themselves of the opportunity.

Sheep.—The flock has passed another successful year with very little trouble or sickness recorded. It consists of two rams and fifty ewes of the Dorset breed, one Oxford Down ram, twenty-eight grade ewes and eighty-seven spring lambs. The fifty-six ewes forming the breeding flock gave birth to ninety-four lambs and raised eighty-seven of them, or 155·3 per cent.

The 1919 wool clip from eighty-one sheep totalled 648 pounds or an average of eight pounds per fleece. The wool was sold through the Vancouver Island Flockmasters' Association for fifty-three cents per pound.

The sheep grading experiment was continued as formerly with gratifying results. The grade Dorsets are showing more Dorset type as each cross is made, a number of them being indistinguishable from the pure-breds. The Oxford type is also showing up well in the Oxford crosses, but a large percentage of these lambs have been males so that results in this experiment are somewhat delayed.

No fall lambs were raised this year. Good prices were obtained for ten spring lambs sold at Easter. These lambs averaged fifty-seven days of age and sold for $17.60 each. This promises to be a profitable branch of the sheep business and with

remuneration such as this should not be neglected. If the ewes are bred to drop lambs early in January and the buck lambs sold at Easter, the ewe lambs get an excellent opportunity to develop rapidly.

An exhibit of sheep was shown at Vancouver and Westminster Exhibitions. All the important prizes were won by the flock in the Dorset classes at both exhibitions including champion ram, champion ewe, first for pens and first for fat lambs any breed.

Swine.—At the end of the year there were on hand two boars, nine sows, fifty-six sucking pigs, all pure-bred Yorkshires. Ten sows owned during the year farrowed eighteen litters with a total of 189 pigs of which 164 were raised, or 86·7 per cent. This makes a total of about nine pigs per litter raised.

There was a good demand for breeding stock during the year, 24 young sows and 11 boars being sold for that purpose. The remainder of the young pigs were retained for experimental feeding purposes.

The experimental work in swine feeding consisted of comparing the self-feeder with trough-feeding and a comparison of feeding varying quantities of skim-milk with no milk and milk substitutes. In the production of 100 pounds of pork the trough-feeding method cost slightly more than that of self-feeding. Taking labour into consideration the advantage of the self-feeder can be still further emphasized. In the feeding of skim-milk an effort was made to find the most economical amount to feed young pigs. Eight lots, with six pigs in each lot, were used in this experiment. They were all fed the same meal mixture and given all they would consume. Lots 1 and 5 received neither skim-milk nor substitute in addition to the grain ration while lots 2, 3 and 4 received 4, 6 and 8 pounds of skim-milk per pig per day respectively in addition. Lot 6 received as an addition to the meal mixture 10 per cent linseed meal, while lot 7 received an addition of 10 per cent tankage. Lot 8 received an addition of 10 per cent tankage, increased after four weeks to 20 per cent tankage. The most profitable returns were obtained from the pigs fed 8 pounds of skim-milk per pig per day while those fed 6 pounds per pig per day came second.

Tankage fed at the rate of 10 per cent was found to be a valuable substitute for skim-milk but not if fed at as high a rate as 20 per cent.

Ten per cent linseed meal gave satisfaction in the early stages of feeding but not towards the end of the experiment. The suggestion in that case possibly is that a higher percentage would have given better results.

Feeding the above meal mixture without adding skim-milk or substitute gave unsatisfactory results.

POULTRY

Weather conditions during the winter were favourable for egg production but hatching in the spring was poor, possibly on account of the heavy egg production in the winter months, which lowered to some extent the vitality of the breeding stock.

The birds wintered were: Barred Rock hens, 100, pullets, 125; White Wyandotte hens, 3, pullets, 34; White Leghorn hens, 60, pullets, 95.

The feed used consisted of wheat, germinated oats, dry mash, mangels and skim-milk. Experiments being carried out are: confinement versus fenced runs, self-feeding in hoppers versus hand feeding in litter, and sand on the floor versus straw for litter. All birds are trapnested and records of their performance kept. Records are also kept of the cost of production, fertility, hatchability and livability of the various matings. Only birds with an egg production of over 150 eggs are used for breeding purposes. A large number of eggs were sold for hatching. The birds have shown very good returns over cost of production in spite of the high cost of feed which was purchased at market price.

BEES

The season opened with three colonies of rather vicious hybrids, one of which swarmed rather early. Two colonies weakened towards the end of the summer and were united, leaving only three to winter. These colonies should have been requeened with pure Italians but just at that time queens were not procurable. One hive was placed on scales and records kept of the daily production. The total honey crop extracted was ninety-four pounds, an average of thirty-one pounds per hive.

FIELD HUSBANDRY

Rotations.—No changes have been made in crop rotation work. In the four-year rotation the following crops are grown: First year, hoed crop, corn and roots; second year, grain seeded down; third year, hay; fourth year, pasture.

Fifty acres of land were rented upon which grain was grown for feeding purposes. On thirty acres of the rented land accurate figures were kept on the cost of growing oats. The results were very satisfactory as the grain was grown for $30 per ton.

Crop Yields.—The following table shows the amount of each crop grown on the farm as well as the rented area in 1919:—

Crop	Yield Tons	lb.
Corn silage	259	1,110
Clover silage	205	1,870
Clover hay	162	90
Mangels	81	—
Carrots	7	—
Sugar beets	2	—
Potatoes	4	900
Mixed grain	34	1,650
Oats	32	400
Peas	1	200
Barley	....	1,260

Cultural Experiments.—The cultural experimental work was continued as previously. The crop yields were poor on all plots, especially in the hoed crop section on the plots where no fertilizer was applied.

FERTILIZER EXPERIMENTS

The fertilizer experiment "E 7" as commenced in 1918 was continued. The crop grown was oats. In the spring twelve plots in the group were divided and an additional quantity of fertilizer added to one-half of each plot. In almost every instance the extra fertilizer more than doubled the crop yield.

CEREALS

The usual variety tests of cereal crops were conducted on uniform plots. The seed was sown April 15. Ten varieties of oats were tested. Owing to a poor stand the old favourite, Banner, gave the poorest possible yield, Irish Victor and O.A.C. No. 72 doing best. Daubeney and Liberty, the earliest varieties, matured in 107 days. The six-row varieties of barley compared favourably with the two-row sorts. Danish Chevalier yielded the most with the six-row varieties Oderbruck and Odessa coming second and third respectively. Only six varieties of peas were tested. Solo was again the heaviest yielder. A mixture of Arthur peas and Banner oats gave a better grain yield than Solo peas and Banner oats. Norwegian beans sown in drills thirty inches apart yielded at the rate of 1,700 pounds per acre. A plot of Marquis wheat yielded at the rate of eighteen bushels per acre.

FORAGE CROPS

Corn.—Twelve varieties of corn were tested. They were sown June 4 and harvested September 24. The late, large growing varieties such as Leaming, White Cap Yellow Dent, and Bailey, gave the heaviest yields while Longfellow and Northwestern Dent gave corn of better quality for ensilage purposes.

Roots.—Thirty-seven plots of mangels of 1-100th acre size were grown from seed of different varieties and from different sources. The results obtained are very interesting. The late, cool spring and the dry, hot summer curtailed the yields or possibly the results obtained would have been different. McKenzies Peerless gave the greatest yield. The largest crop of carrots grown on twenty-four plots was White Intermediate grown from Summerland seed. Chatham grown sugar beet seed produced a heavier crop of sugar beets than B.C. grown seed or the Wohanka and Waterloo varieties.

Grasses and Clovers.—The trees in the orchard where the grass and clover plots are situated have grown so large that they shade the plots, with the result that the yields obtained are not representative.

Root Seed.—On account of late planting, which was done between May 9 and 19, the cool, wet spring, followed by the dry, hot summer, and a light attack of aphis just before maturing, the root seed was almost a failure. Only 1,500 pounds of number one seed were produced on seven acres. The variety was Yellow Leviathan.

HORTICULTURE

Following the mild winter of 1918-19 the spring was cold and wet and unusually late; as a consequence most garden produce was late in maturing. The ornamental shrubs and trees blossomed well though rather later than usual.

Fruits.—Small fruits did well, currants, raspberries and blackberries exceptionally so, though strawberries and gooseberries were a failure owing to the ravages of strawberry weevil and mildew. Prunes and cherries bore heavily and were free of disease. Apples and pears yielded only small crops and these were of an indifferent quality.

Vegetables.—The usual tests in potato culture were carried on with satisfactory results. The rest of the horticultural work consisted of a continuation of the seed growing commenced last year, the roots saved from last year's growing being replanted and in all cases a quantity of seed was grown which was all of good quality and well ripened.

Flowers.—The roses did very well, bearing a lot of bloom of good quality. We have renewed many of the dead bushes and have planted several new varieties as well. Perennials and annuals were good. Annual seed from many of the other Experimental Farms was tested with commercial seed and made a most favourable showing, Summerland seed again was exceptionally good. A quantity of seed was saved and will be sown here during the coming season.

FARM IMPROVEMENTS

Buildings.—A new horse barn, sufficiently large to accommodate eighteen horses, was erected on a site east of the main barn. The implement shed was moved from its old position to one more suitable. A new office was built in a convenient location and is serving the purpose well for which it was intended. Numerous small repairs and improvements were made to the buildings and fences on the Farm, but no new fences were built, except those of a temporary nature.

Land Clearing.—Underbrushing the remaining uncleared area on the east side of the farm was completed. Four acres of land that had been previously underbrushed were stumped, levelled and ploughed, and put in readiness for planting.

TRAINING RETURNED SOLDIERS

In conjunction with the Soldiers' Settlement Board some three hundred returned soldiers received a short training course in practical agriculture between the months of April and November. The course lasted six weeks during which time each man was required to do practical work in each of the following lines: General farm work, horses, cattle and dairying, sheep and swine, poultry, gardening and land clearing.

EXHIBITIONS

In co-operation with the Sidney and Summerland Stations an agricultural exhibit was displayed at Vancouver and New Westminster Exhibitions. Excellent exhibits of Holstein cattle, Dorset sheep and Yorkshire swine were also shown at these two exhibitions. No exhibition work was done at the smaller local fairs.

MEETINGS

The Superintendent attended the following fairs and meetings: New Westminster Exhibition Committee meeting, B.C. Dairymen's Association meetings at Milner, Chilliwack and Comox, Vancouver Exhibition, Chilliwack Exhibition, New Westminster Exhibition, Chilliwack School Garden Competition, East Chilliwack Institute meeting, B. C. Holstein Breeders' Association sale, Western Canada Livestock Union, Victoria, Western International Stock Show, Portland, Coqualeetza Institute, Sardis, Dairymen's Convention, Vancouver, Annual Meeting New Westminster Fair Board, Livestock Meetings, Toronto, and Bull Sale, Kamloops.

VISITORS

It is estimated that about 2,500 people visited the Farm during the year.

EXPERIMENTAL STATION FOR VANCOUVER ISLAND, B.C.

REPORT OF THE SUPERINTENDENT, LIONEL STEVENSON, M.S.

SEASONAL NOTES

The climatic conditions experienced during the period of growth averaged lower in rainfall and temperature than is usual for the district. The spring seeding operations were finished later owing to the backward weather in April. Beneficial rains ceased April 30 and were not experienced again until late in the autumn. Autumn-sown crops and all plants of a biennial or perennial character withstood the drought conditions without injury, while annuals did not do at all well. More food plants of a perennial character are advised for the district.

METEOROLOGICAL RECORDS

Month	Temperature			Precipitation	Sunshine	
	Highest	Lowest	Mean		Minimum	Possible
	°	°	°	Inches	Hours	Hours
April	61·0	32·0	46·7	2·15	168·30	411
May	71·0	36·0	51·7	1·18	251·30	473
June	75·5	38·0	51·0	0·77	255·42	482
July	84·5	45·0	61·33	0·27	365·18	486
August	85·0	40·0	60·5	0·06	312·24	444
September	76·00	39·9	57·30	1·85	213·	377
October	67 0	32·0	48·0	1·30	136·22	335
November	56·0	28·0	42·0	5·94	43·6	276
December	52·0	14·0	33·0	4·75	68·44	259
January	54·0	23·0	37·0	3·28	49·6	273
February	53·0	29·0	39·1	0·61	134·50	286
March	56·0	25·5	41·4	2·87	108·26	370
Total for year				25·06	2,106·06	4,472

LIVE STOCK

Horses.—The four work geldings that have been in use during the past seven years were used for land tillage and improvement work on the Station during the year. These horses have been maintained in good health and condition on the following ration: one pound of crushed oats and one pound of mixed hay for each one hundred pounds weight of horse. Carrots were fed during the winter season and week-end pasture was provided during the summer. When not used for farm work, the horses were employed teaming gravel, stone and lumber.

Cattle.—The Jersey herd established in 1916 has been continued. Two cows exceeded the four-pound fat standard. The herd now consists of fifteen head of females. The granddaughters of "Rosalind of Old Basing" have failed as dairy cows, and are being replaced by heifers of other lines of breeding.

Females were in active demand but there was little demand for young bulls.

Swine.—A number of choice young Berkshires were sold to farmers of the district. Two young sows were retained for breeding and maintenance cost experiments. One fine young boar was imported from Alberta.

Sheep.—A small flock of Dorset Horned sheep was secured in March as a foundation flock.

POULTRY

Good progress was made in poultry breeding, culminating in the production of many high-producing individuals. The vitality and weight of the stock has been held at a high standard. A gradual increase in egg production has attended the efforts to improve the flock by breeding. The 300-egg individual in a family of six full sisters that average 260 eggs per year has been attained. Costs in egg production, maintenance, fattening, incubation, brooding and rearing were obtained. Many pedigreed cockerels were sold to breeders. Cockerels were supplied to other Stations in the System. Provision was made for expansion in poultry breeding and experimentation. A heavy demand for stock and eggs existed throughout the year. Two laying houses and four colony houses were added to the plant. Oil and electric brooders were installed.

BEES

All colonies wintered well, reared brood early and were in fine shape for the honey flow. The apiary gave an average of 100 pounds surplus per colony, the heaviest in five years.

FIELD HUSBANDRY

Rotations.—Two-year—Oats, peas, vetch—clover. Three-year—Oats, sweet clover —beans. Four-year—Corn, wheat, clover—clover. Four-year—Oats, peas, vetch—wheat or oats—colver—clover. Clover seedings were injured by drought, spring crops were very short, autumn crops and hay were heavy. Sweet clover failed to start. All cultivated crops proved very expensive and in some cases unprofitable.

Cereals.—The autumn-sown cereals suffered from winter-killing. Yields were below the average. October seedings on well drained lands wintered much better than late seedings. On ill-drained areas the winter-killing was very heavy. The spring seeding was later than usual and followed by dry cool weather in May and June, gave very light yields.

Autumn wheat per acre average of three best varieties	26.6	bushels.
Spring wheat per acre average of three best varieties	17.4	"
Peas per acre average one best variety	38.5	"
Oats per acre average of three best varieties	33.4	"
Barley per acre average of three best varieties	22.9	"

Heaviest yielding varieties under test in 1919 were:—
Autumn wheat.—Sun.

Spring wheat.—Marquis.
Peas.—Solo.
Oats.—O.A.C. 72.
Barley.—O.A.C. 21.

Five years' cereal work indicates that the following varieties are most satisfactory for the Island districts:—

Autumn wheats.—Sun, Golden Chaff, Bluestem.
Spring wheats.—Marquis, Bluestem.
Autumn oats.—Eclipse.
Spring oats.—Victory, O.A.C. 72, Banner, Garton.
Hulless oats.—Liberty.
Winter peas.—Solo, Arthur.
Spring peas.—Solo, Arthur.
Winter barley.—Tapp.
Spring barley.—O.A.C. 21, Manchurian, Success, Chevalier.
Hulless barley.—White Hulless, Blue Hulless.
Winter rye.—Thousand Fold, Dominion, Petkuser.
Vetches.—Common Vetch, Golden Tares, Pearl Vetch.

Cereal Breeding.—Head selection work was done with the various varieties and hybrids during the season, but no hybridizing was done, owing to pressure of other work.

FORAGE PLANTS.

Corn.—Ten varieties were under test for grain and silage production. All grew well and gave a good yield of green corn per acre. Very little grain was ripened. The following varieties are best suited to the district: Palisade, Northwestern Dent, Longfellow, King Phillip. The cost of production of corn was very high and this crop is not likely to be a very profitable one in the district. High labour cost and cool growing seasons have been very much against corn-growing in the Island district.

Sunflowers.—The Russian sunflower was tested along with corn. The sunflower gave a larger total weight per acre, but this extra weight is largely water. The digestible dry matter content of the sunflower or the quality of the ensilage had not been determined at the close of the year.

Roots.—Thirty-seven varieties of mangels were under test. Varieties recommended: Giant Long Red, Danish Sludstrup, Yellow Globe. Thirty varieties of carrots were under test. Varieties recommended: Large White Belgian, Ontario Champion.

Sugar Beets.—Four varieties of sugar beets were under test, all were of the same character and gave identical yields. Ten tons per acre of rough roots is the average that the upland areas have produced in the past five years. The growing of the sugar beet for sugar is not a good prospect in the Island district, but the growing of sugar beet seed is a splendid commercial prospect.

Root Seed.—Mangel seed was produced under both autumn and spring setting of seed stock. Heavier yields were obtained from the autumn setting at a lower cost. Sugar beets were seeded under the "Seed where grown" method and gave a very heavy yield at a very low cost. The sugar beet has proved to be one of the best seed growing prospects of the district. Turnips were seeded under two methods and the cost of production found to be too high for a commercial undertaking. Another failure was experienced in the second attempt to grow mangel stecklings by sowing the seed during the summer period.

Alfalfa continues to do well and gave the usual three good crops during the season. The area was given one thorough cultivation with the spring tooth cultivator, immediately after the first crop had been taken off. This sufficed to keep it weed free for the year. Ontario Variegated alfalfa has proven to be the most useful variety for the Island district. A number of varieties and types are under test under the row method of culture. The alfalfa area was increased considerably during the season. Early May seeding has proven the best.

Variety tests for grasses, clovers and miscellaneous forage crops were maintained. Orchard grass, tall oat grass, red and alsike clover continue to be the most useful of the haymaking plants for the district.

HORTICULTURE

The orchards were under the clover mulch system during the year; this resulted in considerable improvement to the soil, but the trees and fruit did not develop as usual during the season, as there was not sufficient moisture for both a soil improvement crop and a fruit crop. The orchard area has been divided to suit a plan of soil improvement experiments. Two areas, one in apples and one in pears, are being left for the continuation of the clover mulch system instituted in 1918. Soil moisture and soil fertility are serious orchard problems in this district. The plant breeding operations were confined to the hybridization of pears, apples, cherries, filberts, strawberries and the caring for seedlings already produced.

Bush and cane fruits did well and excellent yields were obtained from strawberry varieties. Loganberry and currant varieties, cherries, quinces, medlars, plums and pears all gave excellent crops of very desirable fruit. Apples and peaches were small and of only fair quality. Nectarines and apricots produced but few fruits of poor quality.

Apples recommended: King, Grimes, Gravenstein, Wealthy, Melba.

Pears recommended: Bartlett, Bosc, Diel, Avranches, Crassane, Hardy, Fulvie, Belle Lucrative.

Cherries recommended: Olivet, Morello, Richmond, Montmorency, Nouvalle Royalle, Bing, Lambert.

Plums recommended: Washington, Bradshaw, Peach, English Damson, Italian prune, Greengage.

Peaches recommended: Alexander, Triumph, Elberta, Crawford Early, Yellow St. John.

Nectarines recommended: Lord Napier.

Quinces recommended: Pineapple, Du Portugal, Bourgeault.

Grapes recommended: Lindley.

Vegetable seed production was one of the main features of the horticultural work for the year. Good results were obtained in the various classes. A total of 2,500 pounds of seed was produced, all of excellent quality and from high-class stock.

The development of the foreign economic plants, tea, eleagnus and persimmons was very satisfactory. The holly orchard was moved to a new and more suitable location. The cascara trees continued to do well under cultivation. The filbert orchard has developed well and has been extended by additional plantings of Station seedlings. The two filbert varieties, Fertile de Coutard and Nottingham, continue to head the list for productiveness. Walnuts, almonds and chestnuts made fair growth. The dry conditions existing during the period of growth of the nut tree varieties is much against the success of commercial nut culture. Trees planted on deep sandy soils are doing well. Grape varieties did not ripen satisfactorily, the Lindley being the only variety so far tested that is suitable for vineyard planting. Strawberry variety test work received considerable attention during the year. Many varieties new to the district have been secured and planted. The Magoon variety continues to be the best variety for commercial planting.

The borders and shrubberies planted in the landscape area made good growth during the year. The varieties and types are extensive, and are of great interest to visitors.

The nursery for horticultural and forest plants has been maintained. Considerable material was removed for planting during the winter and spring periods.

The flowering bulb experiments continued to attract much attention. Results in bulb growing have been satisfactory. Bloom production has been excellent.

The arboretum received due attention. Trees suited to local conditions grew well, while such species as are unable to withstand long summer drought have perished. The southeast end of the arboretum area was planted with seedling nut trees of filbert, chestnut and walnut varieties.

BUILDINGS

A residence for the use of Superintendent was built. An extension was built on the dairy barn. Two laying houses and four colony houses were added to the poultry plant. A small pump-house was erected on the horticultural grounds. General repairs and painting were carried out on the existing structures.

SOIL IMPROVEMENT

Many tons of rocks, stones and roots were teamed from the fields. Some tile draining was done.

ROAD IMPROVEMENT

Road grading and gravelling were practised on portions of the farm roads.

EXHIBITIONS

An exhibit with an official in attendance was supplied to the Vancouver and New Westminster Fairs in September and October. A seed exhibit with an official in charge was supplied the Provincial Seed Fair, Kamloops, in January. An exhibit without an official was sent to the Cowichan Agricultural Society Fair at Duncan.

MEETINGS ATTENDED

The Superintendent attended and acted as judge at the following fairs and exhibitions: The Provincial Exhibition at New Westminster, the Seed Fair at Kamloops, the Flower Show at South Saanich, meetings of Farm Institutes, Woman's Institutes, Seed Growers, Dairymen and Greater Production Organizations were addressed at various times throughout the year.

VISITORS

Many large picnic parties visited the Station during the summer period. Many visitors from Western Canada and the United States visited the Station seeking information relative to island conditions. Many island people called for information during the year. The estimated aggregate of all visitors for the year is 3,855 people.

CANADA

DOMINION BUREAU OF STATISTICS

FINANCE DIVISION

MUNICIPAL STATISTICS

REPORT ON CITIES AND TOWNS HAVING A POPULATION OF 10,000 AND OVER

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 17—1921.]

STATISTICS OF CITIES OF CANADA HAVING A POPULATION OF 10,000 AND OVER.

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STATISTICS OF CITIES, 1919.

PREFACE.

For some time past there has been a growing demand from officials, financial corporations, economists and others interested in taxation and similar problems, for comparative statistics of the more important municipalities throughout Canada, more particularly statistics of municipal finance. Jurisdiction with regard to municipalities is vested in the Provincial Governments, and the first essential for comparative statistics is the adoption of a uniform system of municipal accounting and reporting. A memorandum outlining a system, and looking to co-operative action between the Dominion Bureau of Statistics and the Provincial Departments, was drawn up in the Bureau in 1918 and submitted to the Provinces. It was recognized, however, that the matter was complex and far reaching in scope, and that definite action would not be feasible without careful discussion of details, such as might take place at a conference of Dominion and Provincial officials.

Pending such discussion it was thought that a useful purpose might be served if a limited survey was undertaken by the Bureau on the lines suggested. A schedule was accordingly sent to urban centres having a population of 10,000 and over, and the present report is based on the replies received. The Bureau tenders its grateful thanks to the municipal officers, who, sometimes at considerable difficulty, in view of the diversified methods of accounting which prevail, filled in the schedules with the data asked for. Without such co-operation a statement, even of the present limited scope, would have been impossible, the usual annual statements not being available for co-ordinated results in view of the different significance attached to items in various localities.

Altogether, returns were received from fifty-three municipalities having a population of 10,000 and over. In a few cases, notably Guelph, Moncton and St. Catharines, the reports sent in were not sufficiently detailed to permit of co-ordination with others, whilst no returns were received from Chatham, Ontario, Shawinigan Falls, Quebec, and Glace Bay, Nova Scotia.

The matter covered in the report is grouped in a series of eight tables, the scheme of which will be noted in the analytical table of contents.

As above stated, the present report is regarded as tentative. The inquiry, however, is thought to have demonstrated the feasibility of procuring municipal statistics in general on a comparative scale when more definite plans have been matured. The experience already gained will permit additions to the schedules, particularly in reference to the classification of financial items. It is the intention of the Bureau to repeat the inquiry if its usefulness is demonstrated, and to embrace an increasing list of municipalities.

The report was prepared by Lt. Col. J. R. Munro as in charge of the Finance Division of the Bureau.

R. H. COATS,
Dominion Statistician.

7610—1½

MUNICIPAL STATISTICS

TABLE 1.—Historical.

Statistics of Cities and Towns of 10,000 and over showing population, total assessed value of taxable property, and total value of exemptions (land and buildings) for the years 1901, 1911 and 1919.

City.	Population			Total Assessed Value of Taxable Property.			Total Value of Exemptions (land and buildings).		
	1901[1]	1911[1]	1919[2]	1901	1911	1919	1901	1911	1919
				$	$	$	$	$	$
Montreal	267,730	470,480	706,600	150,479,863	384,971,991	623,820,959	38,254,130	120,119,419	196,867,846
Toronto	208,040	376,538	499,278	128,954,144	306,751,673	642,816,690	23,428,893	49,729,905	[6] 90,616,002
Winnipeg	42,340	136,035	[4]200,000	22,355,600	172,677,250	236,023,520	5,949,600	27,511,350	40,146,950
Vancouver	27,010	100,401	123,050	20,233,130	136,579,005	205,044,673	None	None	[5] 35,399,825
Quebec	68,840	78,190	114,550	19,100,349	51,187,450	73,038,256	7,206,960	11,916,060	33,000,000
Hamilton	52,634	81,969	108,143	26,010,695	47,383,346	87,157,890	3,402,610	7,166,268	15,002,740
Ottawa	59,928	87,062	107,732	[6]23,919,705	[6]54,950,786	120,463,606	15,469,625	23,242,721	44,294,616
Calgary	4,398	43,704	75,000	2,307,040	52,746,600	77,943,010	[7] –	[7] –	[8] 4,463,396
Edmonton	2,626	24,900	66,066	906,345	[8]44,571,750	79,306,320	110,167	[8] 2,517,380	[8] 6,947,950
Halifax	40,832	46,619	60,000	–	–	37,330,810	–	–	19,779,700
St. John	40,711	42,511	[6]60,000	25,151,200	29,840,300	46,013,550	[7] –	[7] –	[7] [9]–
London	37,976	46,300	59,100	17,806,940	28,230,539	40,783,044	539,470	532,730	5,239,547
Victoria	20,919	31,660	50,000	10,814,280	46,516,205	71,897,065	1,103,660	1,642,680	10,119,040
Regina	2,429	30,213	40,000	952,129	26,987,270	[9]40,982,515	82,561	7,897,886	15,190,300
Brantford	16,619	23,132	[3]33,000	6,560,905	13,402,005	15,718,805	439,500	[10] 2,109,075	3,839,825
Windsor	12,153	17,829	31,629	5,373,725	11,741,850	32,953,994	1,193,300	2,680,500	5,132,414
Verdun	1,898	11,629	28,432	1,796,151	2,499,630	15,085,400	215,760	285,455	3,809,780
Hull	13,993	18,222	[6]28,392	3,171,091	4,550,346	9,465,860	454,575	1,347,326	4,487,383
Saskatoon	113	12,004	28,000	[11] 325,380	25,221,100	28,433,044	[7] –	1,826,555	2,324,835
Sydney	9,909	17,723	25,000	[7] –	–	9,245,554	[12] –	[12] –	[12] –
Three Rivers	9,981	13,691	25,000	2,423,311	7,187,074	16,356,575	1,278,206	4,627,051	11,663,553
Kingston	17,961	18,874	23,737	6,671,285	8,156,072	[13]13,016,727	2,597,350	3,057,350	[7] –
Moosejaw	1,558	13,823	23,155	[14] 2,916,840	[15]20,600,284	[15]20,612,578	[14] 746,335	7,093,178	4,955,240
Sherbrooke	11,765	16,405	22,583	4,694,215	6,988,105	12,923,261	408,300	692,275	7,831,000
Peterborough	11,239	18,360	22,000	4,533,735	9,707,955	[16]13,112,605	576,825	1,697,520	2,458,345
Sault Ste. Marie	7,169	10,981	21,500	1,915,530	5,223,446	17,650,175	822,500	1,982,345	1,462,510
Kitchener	9,747	15,196	21,052	[17] 3,410,855	[17] 6,288,829	11,957,850	[2] 373,000	840,980	1,529,247
Fort William	3,633	16,499	20,000	1,333,451	14,231,202	21,973,480	25,000	1,416,175	2,324,225
St. Cathariaes	9,946	12,484	19,196	4,580,180	6,861,741	15,465,385	[7] –	862,935	3,162,225
St. Thomas	11,485	14,054	20,000	[7] –	[7] –	10,248,310	[7] –	[7] –	1,917,690
Westmount	8,856	14,579	19,500	11,527,300	27,437,954	44,583,350	787,950	4,304,483	9,604,580
Moncton	9,026	11,345	19,000	[7] –	[7] –	19,000,000	[7] –	[7] –	10,375,000
Stratford	9,959	12,946	18,106	4,457,410	8,139,660	8,858,350	648,100	1,359,025	2,522,550
Guelph	11,496	15,175	17,032	3,817,255	[13] 7,094,870	8,832,030	[7] –	2,051,200	2,100,240
Lachine	5,561	10,699	16,500	[7] –	[7] –	13,661,338	[7] –	[7] –	3,724,181
New Westminster	6,499	13,199	16,000	2,504,075	7,435,435	16,645,212	[5] 1,345,030	8,097,625	6,530,615
Port Arthur	3,214	11,220	[3]15,106	1,466,000	9,929,742	22,574,399	[7] –	[18] 4,583,270	3,848,330
Sarnia	8,176	9,947	14,649	2,253,772	4,926,741	11,092,243	420,350	1,099,170	1,034,309
Brandon	5,620	13,839	14,421	1,723,225	9,062,775	15,447,978	824,159	2,065,490	4,591,967
Niagara Falls	5,702	9,248	14,307	[7] –	4,346,687	10,759,286	[7] –	447,300	703,800
Outremont	1,148	4,829	12,550	1,390,861	4,411,164	11,750,251	292,690	951,936	5,407,535
Galt	7,866	10,299	12,506	2,706,295	4,346,815	7,580,914	[7] –	1,044,197	1,780,355
Belleville	9,117	9,876	12,345	[17] 3,989,836	[17] 4,916,817	[13] 6,240,165	[7] –	1,065,850	[7] –
St. Boniface	2,019	7,483	12,225	1,312,167	11,614,520	12,547,265	448,022	1,260,190	2,274,520
Charlottetown	12,080	11,203	14,000	3,725,076	4,281,170	5,704,308	100,000	100,000	1,000,000
Lethbridge	2,072	8,050	12,000	118,605	11,908,555	11,723,655	[7] –	1,483,305	5,918,705
New Glasgow	4,447	6,383	12,000	1,272,655	2,239,216	5,331,530	[19] 61,970	[19] 76,384	528,900
Owen Sound	8,776	12,558	11,768	2,880,668	5,901,930	7,022,883	382,110	1,100,550	1,459,500
Amherst	4,964	8,973	11,000	1,953,030	3,809,350	4,844,430	245,340	543,650	750,000
Medicine Hat	1,570	5,608	11,000	795,201	4,907,560	14,292,838	[7] –	561,995	1,345,351
St. Hyacinthe	9,210	9,797	10,541	2,604,200	3,216,350	4,233,818	1,115,100	2,212,600	3,245,275
Woodstock	8,833	9,320	10,156	2,752,100	4,236,861	5,428,345	[7] –	835,720	1,387,900
Levis	7,783	7,452	10,000	[7] –	[7] –	3,556,595	[7] –	[7] –	3,834,294

[1] Census of Canada. [2] Estimated by City officials. [3] Year 1920. [4] Year 1918. [5] Improvements exempt 50%. [6] Land and buildings only. [7] Not available. [8] Land only. [9] Including building improvements, land and business assessment. [10] Totally exempt or liable for local improvement only. [11] Year 1903. [12] No assessed value placed on any of the properties. [13] Including business assessment. [14] Year 1905. [15] In 1911 the assessment on improvements was 60% of the value whereas in 1919 it was only 45%. [16] Property assessed for schools only $1,646,790 included. [17] Business and income. [18] Of this $2,507,135 is liable for school rates. [19] This includes widow exemptions and exemptions of manufacturers. Churches, school houses and goverament properties are also exempted but no assessed valuation is placed on them.

TABLE 2—General Statistics.

Name of City or Town	Fiscal Year ended	Area in Acres		Estimated Population	Year of Incorporation			
		Land Area	Water Area		As a Village	As a Town	As a City	Latest year of Incorp.
GROUP I—Cities having a Population of over 100,000.								
Montreal, Que.	Dec. 31, 1918	32,155·15	2,152	706,600	–	–	1,832	1 832
Toronto, Ont.	Dec. 31, 1919	20,480	5,203·2	499,278	1,793	not k'n	1,834	1,834
Winnipeg, Man.	April 30, 1920	14,865	422	200,000	–	–	1,873	1,873
Vancouver, B.C.	Dec. 31, 1919	10,547·20	3,833·6	123,050	–	–	1,886	1,886
Quebec, Que.	April 30, 1920	5,820	–	114,550	–	–	1,833	1,833
Hamilton, Ont.	Dec. 31, 1919	7,910	–	108,143	1,816	1,833	1,846	1,846
Ottawa, Ont.	Dec. 31, 1919	5,295·25	850	107,732	1,827	1,847	1,854	1,854
GROUP II—Cities having a Population of 50,000 to 100,000.								
Calgary, Alta.	Dec. 31, 1919	25,920	–	75,000	–	1,884	1,894	1,894
Edmonton, Alta.	Dec. 31, 1919	27,200	1,000	66,000	–	1,892	1,904	[6] 1,911
Halifax, N.S.	April 30, 1919	4,363	–	69,000	1,749	–	1,841	1,841
St. John, N.B.	Dec. 31, 1918	13,440	–	60,000	–	–	1,785	1,785
London, Ont.	Dec. 31, 1919	6,302	–	59,100	1,840	1,848	1,854	1,854
Victoria, B.C.	Dec. 31, 1919	4,637·21	–	50,000	–	–	1,862	1,862
GROUP III—Cities having a Population of 25,000 to 50,000.								
Regina, Sask.	Dec. 31, 1919	8,427	–	40,000	–	1,883	1,903	1,903
Brantford, Ont.	Dec. 31, 1919	3,159	133	[12] 33,000	1,830	1,847	1,877	1,877
Windsor, Ont.	Dec. 31, 1919	2,553	–	31,629	1,854	1,857	1,892	1,892
Verdun, Que.	[4] –	1,426·5	–	28,432	1,875	1,907	1,912	1,912
Hull, Que.	Dec. 31, 1918	3,988	22	28,392	[10] –	[10] –	1,875	1,875
Saskatoon, Sask.	Dec. 31, 1919	8,000	480	28,000	1,901	1,993	1,906	1,906
Sydney, N.S.	Dec. 31, 1919	3,030	730	25,000	–	1,885	1,904	1,904
Three Rivers, Que.	Dec. 31, 1919	2,560	300	25,000	–	1,846	1,857	1,915
GROUP IV—Cities having a Population of 10,000 to 25,000.								
Kingston, Ont.	Dec. 31, 1919	2,127	–	23,737	[4] –	[4] –	[4] –	[4] –
Moosejaw, Sask.	Dec. 31, 1919	9,760	–	23,155	–	1,884	1,903	1,903
Sherbrooke, Que.	Dec. 31, 1919	3,104	–	22,583	–	1,852	1,875	1,875
Peterborough, Ont.	Dec. 31, 1919	2,536·65	289·10	22,000	–	1,850	1,905	1,905
Sault Ste. Marie, Ont.	Dec. 31, 1919	4,900	300	21,500	Not incorp.	1,887	1,912	[3] 1,918
Kitchener, Ont.	Dec. 31, 1919	3,182	–	21,052	1,854	1,869	1,912	1,912
Fort William, Ont.	Dec. 31, 1919	8,634	1,231	20,000	–	1,892	1,908	1,908
St. Catharines, Ont.	Dec. 31, 1919	2,400	160	19,196	–	1,845	1,876	1,876
St. Thomas, Ont.	Dec. 31, 1919	1,800	–	20,000	1,852	–	1,881	1,881
Westmount, Que.	Oct. 31, 1919	976·58	–	19,500	1,879	1,893	1,908	1,908
Moncton, N.B.	Dec. 31, 1919	2,092	–	19,000	–	–	1,890	1,890
Stratford, Ont.	Dec. 31, 1919	2,835	–	18,106	1,854	1,858	1,885	1,885
Guelph, Ont.	Dec. 31, 1919	3,104	–	17,032	–	–	1,879	1,879
Lachine, Que.	Dec. 31, 1919	2,996	–	16,503	–	1,872	1,909	1,909
New Westminster, B.C.	Dec. 31, 1919	3,840	–	16,000	–	–	1,872	1,888
Port Arthur, Ont.	Mar. 9, 1920	9,127	1,148	15,101	–	1,884	1,903	1,903
Sarnia, Ont.	Dec. 31, 1919	1,582	–	[9] 14,619	–	1,857	1,914	1,914
Brandon, Man.	Dec. 31, 1919	5,693	157	14,421	–	–	1,882	1,882
Niagara Falls, Ont.	Dec. 31, 1919	1,655	–	11,307	1,856	1,881	1,904	1,904
Outremont, Que.	Oct. 31, 1919	975	–	12,655	1,875	1,895	1,915	1,915
Galt, Ont.	Dec. 31, 1919	1,593	–	12,590	1,850	1,857	1,915	1,915
Belleville, Ont.	Dec. 31, 1919	1,800	–	12,345	–	1,836	1,877	1,877
St. Boniface, Man.	Dec. 31, 1919	11,290·68	418	12,225	–	1,882	1,908	1,908
Charlottetown, P.E.I.	Dec. 31, 1919	836	–	14,000	–	–	1,855	1,855
Lethbridge, Alta.	Dec. 31, 1919	6,914	–	12,000	–	1,890	1,906	1,906
New Glasgow, N.S.	Dec. 31, 1919	2,560	50	12,000	–	1,875	–	1,875
Owen Sound, Ont.	Dec. 31, 1919	5,500	–	11,768	–	1,857	1,920	1,920
Amherst, N.S.	Dec. 31, 1919	2,500	–	11,000	–	1,889	–	1,889
Medicine Hat, Alta.	Dec. 31, 1919	10,668	518	11,000	–	1,899	1,907	1,907
St. Hyacinthe, Que.	Dec. 31, 1919	1,091	–	10,541	1,849	1,853	1,857	1,915
Woodstock, Ont.	[4] –	1,525	–	10,150	1,851	1,859	1,901	1,901
Levis, Que.	April 30, 1919	2,222	–	10,000	–	1,861	1,916	1,916

[1] Gen. statistics for given year—Receipts and Expen. for 1918. [2] Frontage tax rates. [3] Amalgamated with town of Steelton Jan. 1st, 1918. [4] Not given. [5] Commissioners. [6] Amalgamated with Strathcona. [7] Including property assessed for schools only $1,646,790. [8] There is also police tax 2½ mills, lighting tax 16c. ft. frontage. [9] Floating pop. of 2,000 included. [10] Documents burned in fire. [11] Including buildings improved and business

TABLE 2—General Statistics—*Continued.*

Governmental Organization								Assessed Value of Taxable Property (Total) $	Amount of Incomes Assessed for Municipal Income Tax (Total) $	Amount of Local Improvement Assessment (Total) $	General Rate of Assessment on the Dollar (Mills).	School Taxes Rate (Mills).
Mayor		Controllers			Aldermen							
Term of Office (Years)	Salary $	No.	Term of Office (Years)	Salary (each) $	No.	Term of Office (Years)	Salary (each) $					
GROUP I—Cities having a Population of over 100,000.												
2	10,000	[5] 5	4	10,000	20	2	1,500	623,820,959	–	–	13·95	R.C. 6; Prot. 7; Neut. 9.
1	7,500	4	1	2,500	24	1	300	642,816,690	42,371,914	23,212,282	20·5	10
1	5,000	–	–	–	14	2	1,200	236,023,520	–	1,103,834	23	6·44
1	5,000	–	–	–	8	1	1,200	205,044,673	–	412,328	[16]20·808	[15] 5·858
2	3,000	–	–	–	12	2	–	73,038,256	–	–	19	Prot. 8; Cath. 5·5; Neut. 5·5.
1	2,500	4	1	1,200	16	1	300	87,157,890	6,524,950	175,642	22	9
1	3,500	4	1	1,500	18	1	300	120,463,606	9,586,970	300,741	16·55	P.S. 6·15; S.S. 10; Col. Inst. 1·45.
GROUP II—Cities having a Population of 50,000 to 100,000.												
1	5,000	[5] 2	2	4,200	12	2	–	77,943,010	–	622,552	24·5294	10·2206
			Pleasure	3,300								
1	4,200	2	Council	& 3,900	10	2	–	79,306,320	4,252,030	–	24·05	11·25
1	2,000	4	2	1,000	18	3	–	37,330,810	–	–	25·4	–
2	3,000	[5] 4	4	3,000	–	–	–	46,013,550	14,990,850	–	26·2	6·66
1	2,000	–	–	–	12	1	–	40,783,044	1,859,279	227,247	32·5	11·8484
1	3,000	–	–	–	10	1	400	71,897,065	–	–	18·65	7
GROUP III—Cities having a Population of 25,000 to 50,000.												
1	2,500	[5] 1	Pleasure Council	6,000	10	2	300	[11]40,982,515	504,690	190,984	26·4	P.S. 9·1; S.S 14·9.
1	1,500	–	–	–	15	1	–	15,718,805	[14]3,545,195	–	24·8	P.S. 9·2; S.S. 10·6.
1	600	–	–	–	12	1	–	32,953,994	813,850	1,409,550	17·145	8·855
2	1,000	–	–	–	8	2	500	15,085,400	–	–	20	Prot. 15 Cath. 8·5
2	–	–	–	–	6	2	–	9,465,860	–	542,500	12·5	P.S. 5; Cath. 8.
1	1,800	[5] 1	Pleasure Council	6,500	10	2	300	28,433,044	129,753	125,728	19·1	P.S. 11·6; S.S. 20; H.S. 2·05.
1	1,500	–	–	–	12	2	–	9,245,854	194,250	–	35	Inc. with Gen. Rate.
4	500	–	–	–	6	4	–	16,356,575	–	106,573	15	10
GROUP IV—Cities having a Population of 10,000 to 25,000.												
1	800	–	–	–	21	1	–	[13]13,016,727	757,095	28,769	19·16	9·34
1	2,000	[5] 1	Pleasure Council	4,320	10	2	300	20,612,578	271,963	98,174	25·75	P.S. 7·7; S.S. 20·9; H.S. 1·25
3	–	–	–	–	10	2	–	12,923,264	–	–	16·5	P.S. 9; Cath. 6.
1	1,000	–	–	–	10	2	–	[13]13,112,605	515,276	–	20·84	10·16
1	Grant of C'l	–	–	–	12	1	–	17,650,175	2,503,487	[2] 54,875	20·7	14·3
1	1,000	–	–	–	15	1	–	11,957,859	445,787	–	20·4	9·35
1	2,000	–	–	–	12	1	–	21,973,480	1,055,243	137,035	21·8623	6·6377
1	1,000	–	–	–	9	1	–	15,465,385	1,107,925	1,062,955	31·75	7·6
1	300	–	–	–	11	1	–	10,248,310	630,928	144,334	20	9
2	–	–	–	–	5	2	–	44,583,350	–	42,302	12	6
1	–	–	–	–	8	1	–	19,000,000	–	–	20	–
1	500	–	–	–	12	1	–	8,858,350	233,156	108,148	25·2	P.S.13·3;S.S. 10·9.
1	1,200	–	–	–	18	3	–	8,832,030	372,090	–	19·3218	10·4282
2	700	–	–	–	7	2	500	13,661,338	–	[4] –	17·5	Prot. 5; Cath. 7
1	2,000	–	–	–	7	1	400	16,645,212	–	91,966	20·4	11·6
1	1,800	–	–	–	10	1	–	22,574,399	615,160	136,353	23·03	5·97
1	–	–	–	–	9	1	–	11,092,243	347,304	33,643	20·794	10·206
1	1,200	–	–	–	10	2	300	15,447,978	–	90,084	22	8
1	1,100	–	–	–	9	1	–	10,759,286	10,000	–	18·8	10·2
3	–	–	–	–	9	3	–	17,750,251	–	78,300	[10]	Prot. 8; Cath. 5·6; and 5·25.
1	600	–	–	–	10	1	–	7,580,914	436,092	9,361,194	19·835	10·165
1	200	–	–	–	9	1	–	[14] 6,240,165	348,450	18,477	23·9	12·6
2	1,000	–	–	–	10	2	250	12,547,265	–	130,308	27·79	12·21
2	324	–	–	–	8	2	–	5,704,308	–	–	20	–
3	4,000	[5] 2	3	3,500	–	–	–	11,723,655	–	–	27·66	P.S. 10·21 S.S. 13·52
1	–	–	–	–	6	2	–	5,331,530	143,550	7,781	15·2	6·8
1	500	–	–	–	16	1	–	7,022,883	334,577	271,286	21·2	P.S. 11·8; Col. Inst. 2.
1	–	–	–	–	6	2	–	4,844,430	167,150	–	22·5	7·5
1	2,500	1	Pleasure Council	3,900	8	2	250	14,292,838	–	45,916	17	15
2	–	–	–	–	10	2	–	4,233,818	–	–	8·5	10
1	500	–	–	–	10	1	–	5,428,345	[13] –	24,543	19·6	10·2
2	–	–	–	–	6	2	–	3,556,595	–	–	11·25	4

assessment. [12] Included in total assessed value of taxable property. [13] Pop. for year 1920. [14] Including business assessment. [15] Subject to 10 per cent rebate.

TABLE 2—General Statistics—*Continued.*

Name of City or Town	Value of Exemptions of Lands and Buildings					
	Churches and Religious Institutions		Educational Institutions		Charitable Institutions	
	Land $	Buildings $	Land $	Buildings $	Land $	Buildings $
GROUP I—Cities having a Population of over 100,000						
Montreal, Que	12,233,965	12,327,145	1,194,450	19,536,165	8,107,150	9,903,250
Toronto, Ont	[5] 5,286,992	[9] 7,606,006	[5] 5,053,689	[9] 14,103,335	[9] 2,357,138	[9] 4,963,850
Winnipeg, Man	1,794,320	2,072,350	2,222,600	3,127,150	257,370	1,391,600
Vancouver, B.C	–	–	–	–	–	–
Quebec, Que	[10] –	[10] –	[10] –	[10] –	[10] –	13,000,000
Hamilton, Ont	524,710	1,569,730	557,330	2,707,870	107,490	140,260
Ottawa, Ont	871,400	1,693,600	1,526,466	2,915,000	558,000	1,073,420
GROUP II—Cities having a Population of 50 000 to 100,000.						
Calgary, Alta	444,540	–	818,805	–	–	–
Edmonton, Alta	355,850	–	1,989,130	–	–	–
Halifax, N.S	928,400	[13] –	1,100,000	[13] –	811,000	[13] –
St. John, N.B	–		–		–	–
London, Ont	273,300	849,900	310,050	1,106,010	41,875	72,725
Victoria, B.C	–	541,660	357,440	976,200	458,860	391,500
GROUP III—Cities having a Population of 25,000 to 50,000.						
Regina, Sask	202,770	151,800	908,800	639,580	25,540	6,900
Brantford, Ont	93,000	538,025	182,725	835,150	29,625	144,550
Windsor, Ont	263,475	667,700	142,050	638,150	48,275	184,275
Verdun, Que	–	413,260	–	422,690	–	–
Hull, Que	71,876	975,900	53,210	332,400	4,000	46,500
Saskatoon, Sask	[10] –	[10] –	[10] –	[10] –	[10] –	1,013,455
Sydney, N.S	–	–	–	–	–	–
Three Rivers, Que	695,350	1,584,400	142,900	547,700	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.						
Kingston, Ont	[2] –	[2] –	[2] –	[2] –	[2] –	[2] –
Moosejaw, Sask	124,925	218,545	272,665	409,775	34,475	82,725
Sherbrooke, Que	[12] –	914,300	[12] –	927,600	[12] –	813,000
Peterborough, Ont	122,480	614,310	73,000	315,650	33,800	224,600
Sault Ste. Marie, Ont	100,000	350,000	100,000	418,202	5,000	15,000
Kitchener, Ont	127,797	251,550	90,931	227,400	–	–
Fort William, Ont	–	–	–	–	–	–
St. Catharines, Ont	63,900	361,250	110,875	599,900	7,500	13,000
St. Thomas, Ont	73,730	28,457	55,480	331,220	3,460	7,700
Westmount, Que	2,732,650	1,328,650	1,389,250	684,350	25,000	43,000
Moncton, N.B	[12] –	750,000	[12] –	750,000	[12] –	25,000
Stratford, Ont	35,900	345,450	51,975	380,925	18,175	76,550
Guelph, Ont	–	–	–	–	–	–
Lachine, Que	[12] –	983,000	[12] –	459,630	[12] –	64,790
New Westminster, B.C	–	105,450	114,125		79,625	242,100
Port Arthur, Ont	54,500	112,550	156,230	206,500	16,100	107,300
Sarnia, Ont	25,200	229,650	28,612	220,700	7,370	43,000
Brandon, Man	82,625	237,525	177,085	349,950	28,110	125,000
Niagara Falls, Ont	39,800	157,900	42,400	201,900	7,000	59,000
Outremont, Que	935,958	642,300	113,022	344,700	14,760	5,000
Galt, Ont	38,665	221,335	29,250	267,250	4,300	81,200
Belleville, Ont	86,700	292,550	49,900	327,300	7,100	92,900
St. Boniface, Man	63,170	178,500	173,190	375,000	90,000	256,000
Charlottetown, P.E.I	–	–	–	–	–	–
Lethbridge, Alta	126,525	199,500	95,785	349,000	15,500	210,000
New Glasgow, N.S	30,000	130,000	30,000	150,000	–	–
Owen Sound, Ont	35,500	155,700	222,600	481,800	5,000	61,000
Amherst, N.S	–	–	–	–	–	–
Medicine Hat, Alta	84,810	[13] –	167,100	[13] –	–	–
St. Hyacinthe, Que	[12] –	1,352,100	[12] –	186,000	[12] –	265,000
Woodstock, Ont	14,650	258,350	19,240	234,760	3,700	66,000
Levis, Que	–	245,450	–	345,350	–	420,840

[1] Gen. statistics for given year—Receipts and Expen. for 1918. [2] Not given. [3] Total exemptions only given. [4] Other exemptions includes railways. [5] No assessed value placed on any of the properties. [6] Improvements exampt, 50 per cent. [7] Includes cemeteries. [8] 50 per cent value of buildings assessed.

TABLE 2—General Statistics—*Continued.*

Value of Exemptions of Lands and Buildings

Corporation Property		Dominion and Provincial Gov't Property		Manufacturing or Industrial Establishments		Other Exemptions		Total Exemptions	
Land $	Buildings $	Land $	Buildings $	Land $	Buildings	Land $	Buildings $	Land $	Buildings $
GROUP I—Cities having a Population of over 100,000.									
50,469,485	23,976,900	22,402,100	15,089,300	3,799,910	12,556,895	3,267,281	2,003,850	101,474,341	95,393,505
[2] 15,349,162	[9] 6,042,733	[9] 5,221,536	[9] 5,463,094	[9] 814,777	[9] 2,039,500	[9] 6,499,777	[9] 6,814,413	[9] 43,583,071	[9] 47,032,931
4,336,290	2,645,100	2,591,750	4,709,300	–	–	[4] 7,988,066	[4] 7,011,060	19,190,390	20,956,560
–	–	–	–	–	–	–	–	[12] –	[6] 36,399,825
–	–	[12] –	20,000,000	–	–	–	–	[12] –	33,000,000
3,145,550	1,953,950	346,830	724,850	591,360	1,421,840	656,510	254,460	6,229,780	8,772,960
2,841,275	4,633,200	4,586,425	18,762,050	87,600	36,120	3,388,344	1,321,716	13,859,510	30,435,106
GROUP II—Cities having a Population of 50,000 to 100,000.									
1,685,589	–	658,581	–	–	–	885,890	–	4,463,396	–
2,405,830	–	1,494,120	–	328,100	–	374,920	–	6,947,950	–
1,107,090	[13] –	8,993,200	[13] –	–	–	6,810,100	[12] –	19,779,700	[13] –
–	–	–	–	–	–	–	–	Not known	Not known.
738,737	627,765	218,550	445,650	379,985	–	48,000	127,000	2,010,497	3,229,050
1,003,300	520,400	1,409,180	2,910,500	–	–	653,000	900,000	3,878,780	6,240,260
GROUP III—Cities having a Population of 25,000 to 50,000.									
[15] 4,005,870	383,140	1,976,740	909,670	–	–	[4] 5,685,810	[4] 293,680	12,805,530	2,384,770
340,375	342,700	72,325	291,000	[11] –	[11] –	605,600	347,750	1,320,650	2,519,175
268,700	1,317,125	265,250	196,250	116,100	727,239	127,375	168,500	1,233,175	3,899,239
–	2,247,170	–	726,660	–	–	–	–	–	3,809,780
80,430	1,849,683	72,630	225,600	251,473	490,139	5,542	28,000	539,161	3,948,222
[12] –	1,087,975	[12] –	223,405	–	–	–	–	[12] –	2,324,835
–	–	–	–	–	–	–	–	[5] –	[5] –
551,450	2,134,753	733,500	1,379,000	686,400	3,208,100	–	–	2,809,600	8,853,953
GROUP IV—Cities having a Population of 10,000 to 25,000.									
[2] –	[2] –	[2] –	[2] –	[2] –	[2] –	[2] –	[2] –	[2] –	[2] –
1,167,465	283,100	226,505	680,200	46,555	176,150	[4] 882,890	[4] 349,265	2,755,480	2,199,760
[12] –	1,702,500	[12] –	629,000	[12] –	876,850	[12] –	1,967,750	[12] –	7,831,000
293,950	135,515	307,800	212,150	125,000	–	–	–	956,120	1,502,225
50,000	276,308	20,000	128,000	–	–	–	–	275,000	1,187,510
251,259	438,310	30,000	20,000	–	–	22,000	63,000	521,987	1,000,260
–	–	–	–	–	–	–	–	[3] 653,475	[3] 1,670,750
288,575	275,225	42,800	186,450	115,025	776,425	262,900	58,400	891,575	2,270,650
94,750	386,000	66,600	176,400	151,315	286,485	–	256,093	445,335	1,472,355
1,690,450	602,700	33,500	90,000	14,950	597,930	248,500	105,000	6,154,300	3,450,280
[12] –	250,000	[12] –	7,500,000	[12] –	1,100,000	–	–	[12] –	10,375,000
497,675	655,750	17,300	173,000	4,250	16,360	6,000	96,000	631,275	1,891,275
–	–	–	–	–	–	–	–	[12] –	[3] 2,190,240
[13] –	747,615	[13] –	58,900	[12] –	1,410,246	–	–	[12] –	3,724,181
1,499,325	689,750	718,250	1,034,500	–	–	2,046,890	–	4,458,215	2,071,800
1,026,300	152,650	200,900	942,200	372,000	450,000	24,000	27,100	1,850,030	1,998,300
26,940	152,000	15,000	87,400	29,425	89,295	7,917	38,500	140,464	893,845
278,460	202,125	233,420	1,104,930	28,380	238,100	1,113,762	372,495	1,941,842	2,650,125
16,200	58,600	6,000	115,000	–	–	–	–	111,400	592,400
279,898	37,000	–	–	–	–	[7] 2,947,017	[7] 88,000	4,290,655	1,117,000
84,755	102,600	–	–	–	–	930,500	20,500	1,087,470	602,885
82,745	275,640	45,900	258,200	1,500	17,000	[14] 54,300	[14] 196,600	328,145	1,460,190
80,390	62,500	20,150	18,000	47,660	500,000	407,960	–	884,520	1,390,000
–	–	–	–	–	–	–	–	[12] –	[3] 1,000,000
917,920	285,100	207,855	368,500	127,400	55,250	–	[8] 2,969,370	1,490,985	4,427,720
4,000	10,000	30,000	70,000	–	–	24,900	50,000	118,900	410,000
118,800	274,100	10,000	95,000	–	–	–	–	391,900	1,067,600
–	–	–	–	–	–	–	–	[12] –	[3] 750,000
645,846	[13] –	120,025	[13] –	327,570	–	–	–	1,345,351	[13] –
–	978,670	[12] –	221,000	[12] –	213,500	[12] –	29,005	[12] –	3,245,275
37,200	66,300	18,200	197,600	–	471,900	–	–	92,990	1,294,910
–	163,869	–	2,001,576	–	429,950	–	227,259	–	3,834,294

[9] Exemptions are for year 1918. [10] Not separated, see total given for charitable inst. buildings. [11] Accounted for by fixed or special assessment inc.; in total assessed value of taxable property [12] Included in buildings. [13] Included in land. [14] Including County of Hastings and Hydro-Electric buildings. [15] Includes saleable property.

TABLE 2—General Statistics—*Continued.*

Name of City or Town	Streets improved, mileage of						Streets unimproved mileage of	Sewers, mileage of
	Macadam	Asphalt	Tarvia or Tar Macadam	Wood Block	Other improved	Total		
GROUP I—Cities having a Population of over 100,000.								
Montreal, Que.	147·6	151·3	11·4	–	63·4	373·7	462·3	572
Toronto, Ont.	34·28	236·66	3·09	4·32	106·27	384·62	148·77	565·47
Winnipeg, Man.	33	113·3	–	26	6·4	178·7	305·5	254·3
Vancouver, B.C.	177·1	27·82	4·36	27·25	5·09	241·62	97	196·94
Quebec, Que.	40	20	–	–	10	70	26	80
Hamilton, Ont.	[4] –	123·2	[4] –	2·07	·74	126·01	42	139·582
Ottawa, Ont.	55	36·29	4·94	1·8	14·79	112·82	47	146·225
GROUP II—Cities having a Population of 50,000 to 100,000.								
Calgary, Alta.	–	51·79	–	4·85	6·05	62·69	135·41	207·44
Edmonton, Alta.	–	46·96	–	1·07	112·172	160·202	540	152·826
Halifax, N.S.	30	10	2	–	2	44	62	50
St John, N.B.	[5] –	[5] –	[5] –	[5] –	36	36	13·2	46
London, Ont.	–	20·8	–	–	21·241	42·041	93·959	102·3
Victoria, B.C.	11·25	55·12	·35	3·18	1·25	71·15	77·7	128·86
GROUP III—Cities having a Population of 25,000 to 50,000.								
Regina, Sask.	27·46	–	–	2·1	1·45	31·01	75	69·9
Brantford, Ont.	69·5	4·55	–	–	4·95	79	10	[10] 72·75
Windsor, Ont.	15	7	–	·25	42·25	64·5	22	48·8
Verdun, Que.	9·8986	4·3125	–	–	4·1	36·59	1·35	19·65
Hull, Que.	5·75	[6] –	5·5	–	–	11·25	23·75	15
Saskatoon, Sask.	–	5·31	–	·41	·82	6·51	55·5	51·35
Sydney, N.S.	1·5	–	1·5	–	9	12	38	29·58
Three Rivers, Que.	4·61	–	·73	–	5·84	11·18	14	25·65
GROUP IV—Cities having a Population of 10,000 to 25,000.								
Kingston, Ont.	32·29	4·872	–	–	1·083	38·245	4	31·434
Moosejaw, Sask.	–	·25	–	4·23	76·2	80·68	267·07	[10] 45·29
Sherbrooke, Que.	30	1·5	·5	–	1	33	4·5	26
Peterborough, Ont.	18·88	4·75	–	–	–	23·63	32·37	36·04
Sault Ste. Marie, Ont.	6	2·2	–	–	7	15·2	20	45
Kitchener, Ont.	26·06	·581	8·203	·444	3·036	38·324	30	37·239
Fort William, Ont.	6·966	2·994	·073	1·472	·20	11·705	59·86	35·54
St. Catharines, Ont.	1·5	13·5	3	1·5	4	23·5	35·5	49
St. Thomas, Ont.	6	1	2	1	1·5	11·5	55	25
Westmount, Que.	2·89	14·316	9·178[1]	–	1·23	27·614	–	29·403
Moncton, N.B.	1·6	4·66	1·6	·15	22·88	30·89	–	23·2
Stratford, Ont.	6	1·05	5·46	–	6·04	18·55	40	35·26
Guelph, Ont.	–	–	–	–	–	–	–	–
Lachine, Que.	18·82	–	–	–	3·286	22·106	–	24
New Westminster, B.C.	28	–	2	·25	10·25	40·5	61·5	50
Port Arthur, Ont.	15	4·4	12	–	43	74·4	103	40
Sarnia, Ont.	10	4·25	–	10·35	2	26·6	10	30
Brandon, Man.	2·75	4	–	·19	26	32·94	Not known.	35
Niagara Falls, Ont.	39	–	·34	–	2·1	41·44	–	30·11
Outremont, Que.	[6]	[6]	18·5	–	·16	18·66	5	18·9
Galt, Ont.	5·75	1·125	1	–	–	7·875	34·88	[1] –
Belleville, Ont.	8·03	2·61	·14	–	·25	11·03	30	13·9
St. Boniface, Man.	·5	15	–	3	25·24	43·74	4	26
Charlottetown, P.E.I.	14	1·5	8·5	–	–	24	[1] –	[1] –
Letbbridge, Alta.	–	1·57	–	–	32·8	34·37	–	[10] 30·5
New Glasgow, N.S.	5	–	1	–	20	26	4	17·5
Owen Sound, Ont.	5	1	1·5	–	·5	8	80	35
Amherst, N.S.	–	–	–	–	2·5	2·5	30	20
Medicine Hat, Alta.	–	–	–	–	27	27	208	[10] 35·21
St. Hyacinthe, Que.	·6	2	1	–	1·09	4·69	20·51	25
Woodstock, Ont.	6	·75	4	–	4·5	15·25	40	23
Levis, Que.	1·5	–	–	·5	–	2	23	15

[1] Not given. [2] 399·95 acres are water.

TABLE 2—General Statistics—*Concluded.*

Sidewalks, mileage of				Public Parks, acreage of		Public Playgrounds		Street Lighting			
								Length of streets lighted		Number of Lamps, Standard or Brackt.	
Board.	Concrete	Other	Total.	Owned by municipality	Not owned by municipality	Number	Area in Acres.	By Electric, Arc, Nitrogen, etc.	By Gas	By Electric, Arc, Nitrogen, etc.	By Gas
GROUP I—Cities having a Population of over 100,000.											
[7] –	[7] –	702·5	702·5	1,421	–	64	1,450	599	–	5,727	–
–	713·89	3·75	717·64	[2] 1,869·61	–	28	12·25	550	–	46,000	–
393·7	136	–	529·7	674·3	–	26	–	500	–	3,527	–
–	211·21	–	211·21	406·5	1,000	1	2·4	360	–	3,133	–
90	35	–	125	–	–	–	–	75	–	4,349	–
–	252·69	–	252·69	560·03	12·5	4	1·5	161	–	8,511	–
–	218·29	–	218·29	183	28	10	32·5	136	–	4,544	–
GROUP II—Cities having a Population of 50,000 to 100,000.											
84	160·91	–	244·91	–	–	29	–	–	–	2,164	–
187·5	50·458	5	242·958	770	–	5	30	–	–	1,515	–
–	20	–	20	25	–	6	5	–	–	430	–
2	7	72	74	20	100	3	–	[4] 35	–	476	–
–	175·29	–	175·29	460·27	–	–	–	122	–	2,951	–
–	132·74	–	132·74	611·32	–	[9] –	[9] –	300	–	1,800	–
GROUP III—Cities having a Population of 25,000 to 50,000.											
72·5	42·76	–	115·26	25·7	–	4	25·5	78·7	–	608	–
–	85	–	85	79·35	–	[3] 7	51·25	62	–	3,142	–
–	118	–	118	17·5	1	–	–	22	–	2,085	–
1·431	24·98	–	25	5·78	–	1	4·59	18·238	–	237	–
[8] –	30·25	–	30·25	5	–	–	–	35	–	435	–
18	54	1	73	395·52	–	–	–	40	–	881	–
–	6·1	–	6·1	9·3	32	–	–	39·4	–	580	–
2	40	–	42	5	1	3	3	26	–	391	–
GROUP IV—Cities having a Population of 10,000 to 25,000.											
1·077	61	2	64·077	–	45	–	–	32·5	–	429	–
30·1	41·49	·56	72·15	163·5	160	3	77	48	–	314	–
–	12	20	32	30	–	–	–	36·5	–	1,591	–
–	69·42	–	69·42	79	–	3	2·5	45	–	1,178	–
5	27	–	32	10	28	9	15	35	–	616	–
–	60·415	–	60·415	122·65	–	–	–	66·275	–	1,618	–
51·58	12·16	–	63·74	–	–	6	20	35	–	813	–
–	56	–	56	14	–	1	4	59	–	2,186	–
–	60	–	60	85	–	1	15	–	–	1,165	–
–	50·151	–	50·151	30·13	–	[3] [9] 3	–	26	–	651	–
–	30·47	–	30·47	13	–	3	13	–	–	443	–
–	52·6	·15	57·75	110	–	5	4	Not known.	–	956	–
–	–	–	–	–	–	–	–	–	–	–	–
–	43	–	43	10	–	[9] 1	[9] –	23	–	558	–
53	23	–	76	145·5	–	–	–	60	–	449	–
10·5	29	–	39·5	700	–	–	–	75	–	2,560	–
–	55	–	55	17	–	2	12	40	–	710	–
·5	55	–	55·5	75	–	–	–	100	–	1,800	–
–	51	–	51	–	204	–	–	20	–	760	–
–	30·7	–	30·7	12·15	–	1	2	20	–	565	–
–	67	–	67	–	–	–	–	38·25	–	1,325	–
7	43·7	–	50·7	42	–	3	10	40	–	869	–
27	12	–	39	–	–	–	–	22	–	179	–
22	15·75	–	37·75	4	1	–	–	[4] –	–	158	–
8·8	38·16	–	46·96	303·7	–	2	–	29	–	500	–
–	5	40	45	5	–	1	4	21	–	323	–
·5	90	–	90·5	260	–	–	–	44·5	–	755	–
–	12	45	57	–	–	3	7	27	–	539	–
3·25	25·38	–	28·63	495	–	1	6	–	27	–	432
–	24	–	24	4	–	2	9	25	–	192	–
–	45	·5	45·5	50	–	6	14	50	–	744	–
28	2	–	30	3·122	–	–	–	22	–	450	–

[1] Exclusive of school grounds. [2] Included in asphalt. [3] Included in other improved. [4] Included in Tarvia. Included in Other. [5] Included in Concrete. [6] Included in Public Parks. [10] Includes storm sewers.

TABLE 3—Waterworks and Purification Plants.

Name of City or Town.	Water Supply System.				
	Source of Supply	Year Built or Purchased.	Value of System inc. power plant and Equipment, Mains, Buildings, and Land [1]	Water supplied to System during Year gallons	Daily Consumption per Capita gallons
GROUP I—Cities having a Population of over 100,000.					
Montreal, Que	St. Lawrence River.	commenced 1852	15,000,000	24,430,000,000	140
Toronto, Ont	Lake Ontario.	1874	15,750,000	22,808,610,000	125
Winnipeg, Man	Shoal Lake	1914–19	6,752,383	3,650,000,000	50
Vancouver, B.C	Capilano and Seymour creeks, N. Vancouver	1891	4,887,490	[2]10,250,000,000	[3] 155
Quebec, Que	Lake St. Charles at Lorette.	1854–84 and 1914	4,000,000	4,380,000,000	100
Hamilton, Ont	Lake Ontario.	1859	4,043,391	5,461,313,465	135·8
Ottawa, Ont	Ottawa River...	1874	4,060,000	7,848,043,020	190·7
GROUP II—Cities having a Population of 50,000 to 100,000.					
Calgary, Alta	Elbow and Bow Rivers.	1899	2,611,555	3,710,000,000	148
Edmonton, Alta	Saskatchewan River.	1903	2,902,429	2,007,718,000	64·8
Halifax, N.S	Lakes	1847	[1] –	3,650,000,000	200
St. John, N.B	Loch Lomond and Spruce Lakes.	1837	2,500,000	6,000,000,000	290
London, Ont	Springs and artesian wells.	1878	1,478,262	1,829,129,000	84·8
Victoria, B.C	Sooke Lake	1915	[4] 2,577,000	2,274,999,375	110
GROUP III—Cities having a Population of 25,000 to 50,000.					
Regina, Sask	Wells and springs.	1904	1,909,698	751,200,000	46
Brantford, Ont	Springs and Grand River.	[6] 1870–1887	1,043,745	10,017,756,852	80·47
Windsor, Ont	Detroit River	1872	991,345	2,499,200,000	190
Verdun, Que	St. Lawrence River.	1908	388,610	806,135,240	78·878
Hull, Que	Ottawa River...	1901	1,217,474	2,492,433,133	250
Saskatoon, Sask	South Saskatchewan River.	1906	1,187,206	657,996,400	64·4
Sydney, N.S	Sullivan's Br and City Res.	1902	600,000	1,111,053,330	122
	Dumeresq and Middle Lakes water shed.	1915			
Three Rivers, Que	Artesian wells...	1876	628,466	788,400,000	108

[1] Not given. [2] For city and surrounding municipalities. [4] Supply system only [5] Included cost of operation and maintenance of slow and drifting sand filtration plants, interest and sinking fund charges on above plants. Chlorination of water supply by department of Public Health.

TABLE 3—Waterworks and Purification Plants—*Continued.*

Water Supply System							Purification of Water System.			
Water Meters in Use	Water metered during Year	Regular Pressure	Fire Pressure	Reservoirs, Number and Capacity	Stand Pipes, Number and Capacity	Mains, mileage of	Method Employed	Daily Capacity	Average Quantity of Water Treated Daily	Average Cost per Day
No.	per cent of	pounds	pounds	mil. gals.	mil. gals.			gallons	gallons	$
GROUP I—Cities having a Population of over 100,000.										
1,701	13	30 to 125	30 to 125	3— 37·95	3— ·153	457	Double filtration.	50,000,000	[2] 67,000,000	214
3,589	34·35	45 to 100	300	1— 39	1— ·1	587·64	Slow sand and drifting sand.	90,000,000	62,600,000	[3] 1,025
32,000	90·5	60	85 to 200	2— —	— —	289·4	None.	—	—	—
1,900	10	140 to 160	140 to 160	2— 35	— —	265	None.	—	—	—
35	1	60 to 80	90 to 120	— —	— —	90	None.	—	—	—
637	—	44 to 100	44 to 100	3— 12·97	1— ·08	188·9	None.	—	—	—
347	12·2	90	110 to 130	— —	— —	187·6413	Chloramine..	40,000,000	20,000,000	38
GROUP II—Cities having a Population of 50,000 to 100,000.										
778	24	80	100	2— 50	1— ·1	207·52	Coagulation..	10,000,000	10,000,000	7
8,000	95	45 to 110	45 to 110	2— 2	— —	165·23	Gravity filter.	6,000,000	6,000,000	60
5,000	[1] —	12 to 65	[1] —	[1] —	[1] —	90	Hypochloride	—	—	—
400	20	101	35 to 101	1— 1·5	— —	92·5	None.	—	—	—
5,396	36·1	60 to 70	80 to 100	2— 6	— —	135	None.	—	—	—
8,412	40·6	80	140	2— 5·691	— —	134·42	None.	—	—	—
GROUP III—Cities having a Population of 25,000 to 50,000.										
4,100	82	35 to 40	120	3— 11·065	— —	75·21	None.	—	—	—
2,650	64	80 to 85	110 to 120	— —	— —	64·346	Natural sand and gravel filter.	10,000,000	2,575,070	2
30	—	55	90 to 100	— —	— —	61·2	Chlorinated...	13,000,000	6,850,000	7
4	—	60	85	— —	— —	17·053	Filtration with alum.	2,208,589	2,208,589	15
10	—	65	90 to 100	— —	— —	30	Mechanical chlorine.	7,000,000	7,000,000	12
2,900	100	55	110	2— 3·5	2— ·325	46·25	Sedimentation and filtration.	4,000,000	1,802,727	36
27	6·5	70	70	3— 816	— —	34·28	None.	—	—	—
17	—	60 to 80	125	1— ·5	— —	29·07	Chlorine—Natural filter through sand.	2,160,000	2,160,000	4

[1] Built by private concern and purchased later by city.
[2] 17,000,000 gals. of raw water treated with hypochlorite.

TABLE 3—Waterworks and Purification Plants—*Continued.*

Name of City or Town.	Water Supply System.				
	Source of Supply	Year Built or Purchased.	Value of System inc power plant and Equipment, Mains, Buildings, and Land $	Water supplied to System during Year gallons	Daily Consumption per Capita gallons
GROUP IV—Cities having a Population of 10,000 to 25,000.					
Kingston, Ont.	Lake Ontario.	1887	440,840	139,760,000	16·65
Moosejaw, Sask.	Infiltration galleries and springs.	1904	1,600,000	306,605,000	41
Sherbrooke, Que.	Magog River	1898	598,867	1,382,112,243	145
Peterborough, Ont.	Otonabee River	1902	724,981	1,128,080,000	146
Sault Ste. Marie, Ont.	St. Mary's River.	1914	668,588	1,177,297,555	193
Kitchener, Ont.	Artesian wells, spring and lake.	1899	479,585	520,834,875	68
Fort William, Ont.	Lock Lomond	1906-7	450,812	1,003,750,000	138
St. Catharines, Ont.	Lake Erie via Welland Canal.	1878	981,362	1,481,159,598	175
St. Thomas, Ont.	Artesian wells and Kettle River.	1890	581,861	650,000,000	108
Westmount, Que.	[3] –	[3] –	[3] –	[3] –	[3] –
Moncton, N.B.	Storage Reservoir	1879 and 1913	750,000	1,416,200,000	204
Stratford, Ont.	Driven wells...	1893	439,983	279,421,000	44
Guelph, Ont.	–	–	–	–	–
Lachine, Que.	St. Lawrence River	1889	470,115	1,460,000,000	260
New Westminster, B.C.	Coquitlam Lake.	1892	542,057	2,128,888,000	99
Port Arthur, Ont.	Lake Superior...	Commenced 1903	1,345,200	736,070,000	133·6
Sarnia, Ont.	Head of R. St. Clair and Lake Huron.	1876 and 1913	470,000	1,424,401,175	292·3
Brandon, Man.	Assiniboine River.	1892	574,117	461,000,000	73
Niagara Falls, Ont.	Niagara River	1884	260,000	1,204,526,000	200
Outremont, Que.	St. Lawrence River.	[3] –	[3] –	[3] –	[3] –
Galt, Ont.	Artesian wells...	1891	451,050	557,498,490	122
Belleville, Ont.	Bay of Quinte	[2] 1887-1899	250,000	600,000,000	133
St. Boniface, Man.	Artesian wells, Greater Winnipeg Water district Aqueduct.	1904	583,629	146,000,000	32·6
Charlottetown, P.E.I.	Driven wells...	1888	312,000	415,000,000	100
Lethbridge, Alta.	Oldman River.	1903	541,728	547,000,000	125
New Glasgow, N.S.	Lake	1888-1911	461,000	800,000,000	100
Owen Sound, Ont.	Sydenham River and springs.	1919	316,099	548,000,000	80
Amherst, N.S.	Napan River....	1893	310,976	411,359,057	112
Medicine Hat, Alta.	S. Saskatchewan River.	1913-14	1,203,426	30,779,657	224
St. Hyacinthe, Que.	Yamaska River.	1897	451,110	700,000,000	–
Woodstock, Ont.	Springs.	1891	261,148	462,873,330	120
Levis, Que.	St. Lawrence River.	1904	–	700,000,000	191

[1] Not given. [2] Built by private concern and purchased later by city. [3] Water supplied by Montreal Water and Power C

TABLE 3.—Waterworks and Purification Plants—*Concluded.*

Water Supply System							Purification of Water System			
Water Meters in Use	Water metered during Year	Regulnr Pressure	Fire Pressure	Reservoirs, Number and Capacity	Stand Pipes, Number and Capacity	Mains, mileage of	Method Employed	Daily Capacity	Average Quantity of Water Treated Daily	Average Cost per Day
No.	per cent of	pounds	pounds	mil. gals.	mil. gals.			gallons	gallons	$
GROUP IV—Cities having a Population of 10,000 to 25,000.										
140	–	76	76	1— ·628	– –	39	Chlorine gas...	12,500,000	382,904	–
2,281	100	65	125 to 260	6— 95·47	1— ·081	67·32	Natural filtration through sand into infiltration galleries.	–	–	–
186	15	40 to 132	40 to 132	1— 11	– –	48	Liquid chlorine.	–	4,000,000	6
–	–	–	–	– –	– –	45·83	None.	–	–	–
540	8·7	75	125	1— ·65	– –	35	Liquid chlorine.	12,080,000	3,000,000	2
3,880	93	50	75	2— 1·25	1— ·5	41·57	Mechanical filters, small part.	400,000	150,000	
60	–	100 to 110	100 to 110	1— ·8	– –	62·71	None.	–	–	–
300	37	70 to 117	70 to 117	3— 365	– –	65·5	Aeration and sterilization.	15,000 000	4,750,000	–
1,943	50	40	100 to 120	2— 32	1— ·5	35	Chlorination, coagulation aeration and filtration.	5,600,000	2,000,000	12
–	–	–	–	– –	– –	–	–	–	–	–
–	–	30	60	2— 500	– –	34·74	Chlorination.	3,880,000	3,880,000	–
2,440	74·67	80	120	– –	1— ·5	Not known.	None.	–	–	–
–	–	–	–	– –	– –	–	–	–	–	–
50	10	80	120	1— ·5	– –	25·25	liquid chlorine	10,000,000	4,200,000	–
330	10	35 to 100	35 to 100	4— 9	– –	90	None.	–	–	–
650	25	135	150	– –	1— ·2	64·5	Liquid chlorine.	8,500,000	5,000,000	
6	6·6	60	100	1— 1·2	– –	34	Sedimentation basin chlorination automatic.	10,000,000	4,282,000	
2,350	67	85	140	– –	– –	29·75	Pressure filters.	3,000,000	1,226,000	
35	–	110	140	1— 1	– –	38	Automatic chlorine.	3,000,000	3,000,000	
–	–	50 to 90	50 to 90	1— 43	– –	–	–	–	–	–
1,236	10	105	125	1— ·15	1— ·22	34	None.	–	–	–
87	–	75 to 80	110 to 120	– –	1— ·365	25	Chlorination.	–	1,700,000	1
1,850	90	60	60	1— 1	1— ·96	25	None.	–	–	–
50	10	55	65	1— 1·25	– –	22	None.	–	–	–
60	30	30	120	– –	2— ·18	37	Mechanical and sand filter.	3,000,000	1,500,000	10
60	100 near lake. 50 in town.	80 to 100	90 to 115	1— 2	– –	30	None.	–	–	–
15	–	60	93	2— 5·5	– –	50	Slow sand filtration.	1,500,000	1,500,000	–
16	1	60	75	1— 1·5	– –	25	None.	–	–	–
45	–	40 to 80	40 to 115	1— 2·33	1— ·423	34·6	Filters and New York cont. Jewel.	6,000,000	2,565,055	8
12	–	55	110	– –	– –	20	Gravity filter.	3,000,000	1,700,000	8
–	–	60	110	1— 1	– –	31	None.	–	–	–
6	16	30 to 135	75 to 180	1— ·1	– –	15	Chlorination.	–	2,000,000	

TABLE 4—Fire and Police Departments.

Name of City or Town	Fire Department.							
	Officers, inc. chief deputies, captains and firemen	Halls or Stations	Hydrants	Horses	Pumping Engines			
					Steam		Gasoline	
					Motor propelled	Horse drawn	Motor propelled	Horse drawn
	No.	No.	No.	No.	No.	No.	No.	No.
GROUP I—Cities having a Population of over 100,000.								
Montreal, Que.	750	45	4,147	265	2	13	3	–
Toronto, Ont.	495	29	6,645	82	–	7	3	–
Winnipeg, Man.	285	15	2,358	53	–	4	–	–
Vancouver, B.C.	187	11	1,814	–	1	4	3	–
Quebec, Que.	174	13	800	50	1	2	–	–
Hamilton, Ont.	125	7	1,853	19	–	2	1	–
Ottawa, Ont.	143	11	1,376	32	–	4	3	–
GROUP II—Cities having a Population of 50,000 to 100,000.								
Calgary, Alta.	105	9	1,086	2	–	1	2	–
Edmonton, Alta.	102	7	803	11	–	1	4	1
Halifax, N.S.	94	7	–	27	3	5	–	–
St. John, N.B.	145	9	521	43	–	7	1	–
London, Ont.	60	5	932	15	–	1	–	–
Victoria, B.C.	66	5	910	–	2	2	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.								
Regina, Sask.	53	4	521	8	–	–	1	–
Brantford, Ont.	36	2	344	4	–	–	1	–
Windsor, Ont.	37	3	568	–	–	–	2	–
Verdun, Que.	35	2	167	6	–	–	–	–
Hull, Que.	36	3	276	13	–	1	–	1
Saskatoon, Sask.	46	3	471	3	–	1	2	–
Sydney, N.S.	48	–	160	3	–	1	2	–
Three Rivers, Que.	[2] 31	2	220	9	–	1	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.								
Kingston, Ont.	19	2	304	7	–	2	–	–
Moosejaw, Sask.	33	3	376	3	–	–	1	–
Sherbrooke, Que.	22	4	265	18	–	2	–	–
Peterborough, Ont.	21	1	–	4	–	1	–	–
Sault Ste. Marie, Ont.	22	3	248	4	–	1	1	–
Kitchener, Ont.	20	2	300	4	–	–	–	–
Fort William, Ont.	37	3	454	11	–	1	–	–
St. Catharines, Ont.	24	3	381	5	1	–	–	–
St. Thomas, Ont.	16	1	194	4	–	–	–	–
Westmount, Que.	39	2	304	10	–	–	1	–
Moncton, N.B.	51	4	138	14	–	2	1	–
Stratford, Ont.	22	1	234	4	–	1	–	–
Guelph, Ont.	19	1	206	4	–	–	–	–
Lachine, Que.	[6] 15	2	214	4	–	1	1	–
New Westminster, B.C.	31	4	185	2	6	1	–	–
Port Arthur, Ont.	37	3	358	8	–	1	–	–
Sarnia, Ont.	14	1	231	5	–	–	–	–
Brandon, Man.	18	1	186	5	–	1	–	–
Niagara Falls, Ont.	[4] –	4	221	7	–	1	–	–
Outremont, Que.	[2] 22	1	183	6	–	–	–	–
Galt, Ont.	19	1	258	4	–	–	–	–
Belleville, Ont.	[3] 16	2	268	6	–	1	–	–
St. Boniface, Man.	16	2	188	10	–	2	–	–
Charlottetown, P.E.I.	40	1	95	4	1	1	–	–
Lethbridge, Alta.	13	2	251	2	–	1	2	–
New Glasgow, N.S.	40	[5] 4	100	–	1	–	1	–
Owen Sound, Ont.	23	[5] 7	173	4	–	–	–	–
Amherst, N.S.	53	3	168	8	–	2	–	–
Medicine Hat, Alta.	17	3	225	–	–	–	1	–
St. Hyacinthe, Que.	20	1	120	8	–	2	–	–
Woodstock, Ont.	11	1	177	5	–	–	–	–
Levis, Que.	12	3	150	9	–	2	–	–

[1] Also carries 146 feet of other ladders. [2] These men also act as policemen. [3] Including 5 volunteers.

TABLE 4—Fire and Police Departments—*Continued.*

Fire Department									
Chemical Engines		Hose Wagons with Chemical Tanks		Hose Wagons, plain		Aerial Ladders			
						Motor propelled		Horse drawn	
Motor propelled	Horse drawn	Motor propelled	Horse drawn	Motor propelled	Horse drawn	Number	Length feet	Number	Length feet
No.	No.	No.	No.	No.	No.				
GROUP I—Cities having a Population of over 100,000.									
–	2	–	1	3	36	3	1,060	4	1,132
–	1	13	–	–	12	2	648	1	345
–	6	–	–	7	16	1	75	3	150
4	–	3	1	7	–	2	160	–	–
–	1	2	–	–	10	3	765	–	–
–	–	2	4	–	2	–	–	–	–
–	–	7	4	–	–	1	85	–	–
GROUP II—Cities having a Population of 50,000 to 100,000.									
–	–	9	–	–	–	1	85	–	–
–	5	5	–	–	6	1	75	–	–
–	2	4	–	1	3	1	75	–	–
–	2	–	–	–	7	–	–	1	65
2	–	–	4	–	2	1	75	–	–
–	–	6	–	–	–	1	75	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.									
1	–	1	2	–	1	1	75	–	–
–	–	3	–	–	2	–	–	1	230
–	–	4	–	–	–	1	75	–	–
–	–	2	–	–	–	–	–	–	–
–	–	–	–	–	4	–	–	–	–
–	–	2	–	1	–	–	–	1	85
1	–	–	–	–	3	–	–	–	–
–	–	–	3	–	–	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.									
–	–	–	1	–	4	–	–	–	–
–	1	3	1	–	1	1	75	–	–
–	–	–	2	–	3	–	–	–	–
1	–	–	–	–	2	–	–	–	–
–	–	1	–	–	2	–	–	–	–
–	–	1	–	–	2	–	–	–	–
1	1	1	1	–	3	–	–	–	–
–	–	1	–	–	1	–	–	–	–
1	–	1	2	1	2	–	–	–	–
–	–	1	–	–	2	–	–	–	–
–	2	–	4	1	–	–	–	–	–
–	–	1	–	–	1	–	–	–	–
–	–	–	1	–	2	–	–	–	–
–	–	1	–	–	1	1	–	–	–
–	–	3	–	1	–	1	65	–	–
–	–	3	2	–	–	–	–	–	–
2	–	1	1	–	1	–	–	–	–
–	–	1	–	–	1 [1]	1	65	–	–
–	–	–	3	–	–	–	–	–	–
–	–	–	–	–	1	–	–	–	–
–	–	2	–	1	–	–	–	–	–
–	–	–	2	–	–	–	–	–	–
–	2	–	–	–	2	–	–	–	–
–	–	–	–	1	–	5	–	–	–
1	2	1	–	–	1	1	50	–	–
–	–	2	–	–	–	–	–	–	–
–	–	–	–	–	1	–	–	–	–
1	–	–	–	1	3	–	–	–	–
1	–	1	–	–	–	1	75	–	–
–	–	–	–	–	5	–	–	–	–
–	–	–	2	–	1	–	–	–	–
–	–	–	–	–	6	–	–	–	–

Volunteer firemen. [5] Including reel houses. [6] Including 6 volunteers.

TABLE 4—Fire and Police Departments—*Continued.*

Name of City or Town	Fire Department							
	Other Ladder Trucks and Ladders				Fire Boats	Hose Sleighs		Chemical Tanks
	Motor propelled		Horse drawn			With Chemical Tanks	Plain	
	Number	Length feet	Number	Length feet	No.	No.	No.	No.
GROUP I—Cities having a Population of over 100,000.								
Montreal, Que	3	1,109	27	6,929	–	1	34	185
Toronto, Ont	4	1,052	7	1,460	1	12	4	–
Winnipeg, Man	–	–	9	2,212				–
Vancouver, B.C	2	110	–	–		–	–	–
Quebec, Que	–	–	9	1,324		1	10	2
Hamilton, Ont	1	321	2	550	–		9	6
Ottawa, Ont	–	–	5	50	–	11	–	11
GROUP II—Cities having a Population of 50,000 to 100,000.								
Calgary, Alta	1	45	1	65	–	–	–	–
Edmonton, Alta	1	50	3	105	–	3	–	–
Halifax, N.S	–	–	3	–	–	–	4	10
St. John, N.B	–	–	3	1,000	–	–	7	–
London, Ont	2	55	–	–	–	–	–	5
Victoria, B.C	1	220	–	–	–	–	4	18
GROUP III—Cities having a Population of 25,000 to 50,000.								
Regina, Sask		–	2	472		–	2	–
Brantford, Ont		–	2	470	–	–	2	18
Windsor, Ont	1	225	–	–		–	–	20
Verdun, Que	1	260	–	–	–	2	–	6
Hull, Que	–	–	2	476	–	–	4	15
Saskatoon, Sask	1	55	–	–	–	2	1	4
Sydney, N.S	1	260	1	210	–	–	2	3
Three Rivers, Que	1	238	1	128	–	3	3	4
GROUP IV—Cities having a Population of 10,000 to 25,000.								
Kingston, Ont	–	–	2	356	–	–	4	10
Moosejaw, Sask	1	237	1	135	–	–	1	–
Sherbrooke, Que	–	–	3	1,045	–	2	3	–
Peterborough, Ont	–	–	1	214	–	–	1	8
Sault Ste. Marie, Ont	–	–	1	200	–	–	3	10
Kitchener, Ont	–	–	1	296	–	–	1	–
Fort William, Ont	–	–	2	450	–	–	3	12
St. Catharines, Ont	–	–	1	275	–	–	1	8
St. Thomas, Ont	–	–	1	252	–	2	–	6
Westmount, Que		–	2	459	–	–	3	–
Moncton, N.B	2	–	–	–	–	–	–	–
Stratford, Ont	1	–	–	–	–	–	1	–
Guelph, Ont		–	1	50	–	–	1	–
Lachine, Que	–	276	1	137	–	–	1	1
New Westminster, B.C	–	–	–	–	–	–	–	–
Port Arthur, Ont	1	300	1	200	–	–	–	–
Sarnia, Ont	–	–	1	125	–	–	–	–
Brandon, Man	–		3	193	–	–	1	–
Niagara Falls, Ont	–	–	2	120	–	–	–	10
Outremont, Que	–	–	1	200	–	–	1	–
Galt, Ont	–	–	1	231	1	1	–	–
Belleville, Ont	–	–	1	314	–	2	3	5
St. Boniface, Man	–	–	1	250	–	–	1	1
Charlottetown, P.E.I	–	–	–	–	–	1	1	–
Lethbridge, Alta	–	–	–	–	–	–	–	–
New Glasgow, N.S	18	400	–	–	–	–	4	4
Owen Sound, Ont	–	–	1	250	–	1	1	–
Amherst, N.S	–	–	1	200	–	–	3	–
Medicine Hat, Alta	–	–	–	–	–	–	–	–
St. Hyacinthe, Que	2	–	–	–	–	–	5	–
Woodstock, Ont	–	–	1	132	–	–	1	4
Levis, Que	–	–	–	–	–	–	6	–

TABLE 4—Fire and Police Departments—*Continued.*

Fire Department												
Water Towers		Auto-mobiles	Other Con-veyances, Reels, Carts, etc.	Hose Length in Feet		Alarm Boxes	Total estimated Value of Equipment	Calls during Year				
Number	Height feet	No.	No.	Chem-ical	Other	No.	$	False or malicious alarms No.	Services not required No.	Services required No.	Total calls No
GROUP I—Cities having a Population of over 100,000.												
2	65	15	16	600	115,500	956	578,000	866	678	1,831	3,375
1	65	10	–	4,600	58,400	557	435,000	327	744	2,356	3,427
1	65	6	13	150	55,567	380	368,699	261	738	588	1,587
–	–	5	–	2,100	42,000	300	222,890	98	134	737	969
–	–	12	–	400	26,300	202	750,000	76	212	425	713
–	–	2	–	1,350	20,000	64	109,371	38	125	360	513
–	–	3	–	1,850	22,250	202	190,516	47	146	326	519
GROUP II—Cities having a Population of 50,000 to 100,000.												
–	–	3	–	350	19,350	156	162,979	58	58	366	424
–	–	3	2	1,500	23,000	150	230,000	75	99	451	625
–	–	9	5	1,700	19,000	62	139,391	24	10	254	288
–	–	1	2	2,500	14,350	118	23,374	12	8	207	227
–	–	–	1	1,600	13,400	71	50,135	24	–	197	221
–	–	2	–	1,900	20,480	114	223,425	14	180	137	331
GROUP III—Cities having a Population of 25,000 to 50,000.												
1	45	1	–	500	10,000	60	80,000	30	33	147	210
–	–	3	1	650	8,000	40	119,541	25	47	97	169
–	–	2	–	800	9,000	96	175,000	20	70	72	162
–	–	1	–	–	4,000	32	85,471	18	5	37	60
–	–	1	1	600	8,750	62	69,505	8	48	158	214
2	80–85	1	–	400	8,400	43	182,465	8	–	203	211
–	–	1	–	400	6,000	46	60,000	17	15	105	137
–	–	1	3	–	7,000	66	47,391	6	6	84	96
GROUP IV—Cities having a Population of 10,000 to 25,000.												
–	–	–	1	200	5,800	66	26,000	22	71	60	131
–	–	2	–	700	9,150	62	105,000	34	63	78	175
–	–	1	2	150	10,000	120	41,473	8	–	–	184
–	–	1	–	200	6,350	37	33,334	4	–	187	191
–	–	1	2	400	8,000	35	45,000	53	39	138	230
–	–	1	–	300	5,000	42	25,030	7	12	41	60
–	–	1	–	500	8,500	46	22,100	8	20	138	166
–	–	–	1	200	4,200	47	21,000	17	3	69	89
–	–	–	–	250	3,900	38	25,000	4	36	27	67
–	–	1	3	200	8,900	54	58,740	5	–	51	56
–	–	–	–	–	–	46	–	–	–	–	–
–	–	–	–	200	6,300	49	60,000	9	22	34	65
–	–	1	1	400	4,400	–	8,961	–	–	–	84
–	–	3	1	200	7,500	32	46,389	5	–	87	92
–	–	–	–	600	10,400	34	58,000	2	4	139	145
–	–	1	–	1,100	11,000	54	60,000	12	57	136	205
–	–	–	–	150	5,000	26	18,000	16	2	40	58
–	–	3	2	200	7,900	40	45,735	26	10	56	92
–	–	–	4	–	7,000	43	26,000	2	8	38	48
–	–	–	1	–	4,000	21	20,000	7	7	35	49
–	–	2	–	250	4,000	–	15,000	–	–	–	25
–	–	–	1	–	5,000 [1]	–	20,000	1	–	46	47
1	115	1	–	300	10,000	40	15,000	27	–	104	131
–	–	2	4	300	5,000	50	15,000	–	25	10	35
–	–	1	2	300	5,500	37	45,000	20	20	45	85
–	–	–	6	400	5,000	19	30,000	10	5	31	46
–	–	1	2	–	6,000	29	–	5	–	69	74
–	–	1	5	250	5,500 [1]	–	37,500	1	3	27	31
–	–	4	1	400	6,000	51	50,000	2	10	43	55
–	–	–	–	–	7,000	36	41,900	1	–	81	82
–	–	–	–	–	4,000	23	18,000	4	7	21	32
–	–	–	–	–	5,500	–	22,712	1	3	51	55

[1] Telephone fire alarm system.

TABLE 4—Fire and Police Departments—*Continued.*

Name of City or Town	Casualties Due to Fires						Causes of Fires.		
	To Fire Staff		To other Persons				Lighting		
			Children under 12 years		Persons over 12 years				
	Killed	Injured	Killed	Injured	Killed	Injured	Electricity	Gas	Oil
	No.	No.	No.	No.	No.	No.	No.	No.	No.
GROUP I—Cities having a Population of over 100,000.									
Montreal, Que	–	19	20	22	–	–	121	43	22
Toronto, Ont	1	31	1	–	2	11	56	23	46
Winnipeg, Man	–	9	–	1	2	4	11	–	–
Vancouver, B.C	–	134	1	2	2	10	34	–	–
Quebec, Que	–	45	–	–	2	–	[1]	[1]	–
Hamilton, Ont	1	–	1	–	1	–	39	20	12
Ottawa, Ont	–	2	–	–	–	–	14	1	3
GROUP II—Cities having a Population of 50,000 to 100,000.									
Calgary, Alta	–	–	–	–	–	–	7	10	1
Edmonton, Alta	–	9	–	–	–	–	11	–	15
Halifax, N.S	–	–	1	–	1	–	8	1	3
St. John, N.B	–	–	–	–	2	–	10	–	–
London, Ont	–	5	–	–	–	–	16	3	3
Victoria, B.C	–	2	–	–	–	–	3	4	2
GROUP III—Cities having a Population of 25,000 to 50,000.									
Regina, Sask	–	–	–	–	–	–	5	–	–
Brantford, Ont	–	1	–	–	–	–	6	2	–
Windsor, Ont	–	2	1	–	1	–	2	2	2
Verdun, Que	–	–	–	–	–	–	4	4	4
Hull, Que	–	1	1	–	–	–	7	–	14
Saskatoon, Sask	–	–	–	–	–	–	1	–	–
Sydney, N.S	–	–	–	–	1	–	3	–	5
Three Rivers, Que	–	–	–	–	–	–	3	–	5
GROUP IV—Cities having a Population of 10,000 to 25,000.									
Kingston, Ont	–	–	–	–	2	–	10	1	5
Moosejaw, Sask	–	–	–	–	–	2	6	–	1
Sherbrooke, Que	–	3	–	–	–	–	[1]	[1]	[1]
Peterborough, Ont	–	–	–	–	–	–	25	2	–
Sault Ste. Marie, Ont	–	–	–	–	–	–	4	–	2
Kitchener, Ont	–	–	–	–	–	–	1	1	4
Fort William, Ont	–	–	–	–	1	–	6	3	2
St. Catharines, Ont	–	–	–	–	–	1	6	1	6
St. Thomas, Ont	–	2	–	–	–	–	10	–	–
Westmount, Que	–	–	–	–	–	–	[1]	[1]	[1]
Moncton, N.B	–	–	–	–	–	–	–	–	–
Stratford, Ont	–	–	–	–	–	1	–	–	–
Guelph, Ont	–	–	–	–	–	–	–	–	–
Lachine, Que	–	1	2	–	–	–	–	2	6
New Westminster, B.C	–	2	–	–	–	–	1	–	3
Port Arthur, Ont	–	–	–	–	–	–	3	–	5
Sarnia, Ont	–	–	–	–	–	–	4	5	1
Brandon, Man	–	–	–	–	–	–	5	–	–
Niagara Falls, Ont	–	–	–	–	–	–	5	3	1
Outremont, Que	–	2	–	–	–	–	2	2	–
Galt, Ont	–	–	–	–	–	–	1	1	1
Belleville, Ont	–	–	–	–	–	–	1	4	2
St. Boniface, Man	–	–	–	–	–	–	–	1	3
Charlottetown, P.E.I	–	–	–	–	–	–	–	–	–
Lethbridge, Alta	–	–	–	–	–	–	1	2	2
New Glasgow, N.S	–	–	–	–	–	–	1	1	–
Owen Sound, Ont	–	–	–	–	–	–	2	1	1
Amherst, N.S	–	–	–	–	–	–	–	–	–
Medicine Hat, Alta	–	–	–	–	–	–	–	2	1
St. Hyacinthe, Que	–	–	–	–	–	–	5	2	2
Woodstock, Ont	–	–	–	–	–	–	1	–	–
Levis, Que	–	–	–	1	–	1	2	–	1

[1]No record.

TABLE 4—Fire and Police Departments.—*Continued.*

Causes of Fires					Fires extinguished by				
Structural defects	Heating	Arson	Other	Unknown	Hand extinguishers	Chemical streams only	Water streams only	Chemical and water streams	Other
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
GROUP I—Cities having a Population of over 100,000.									
65	225	11	417	927	562	–	956	–	–
12	342	8	1,456	419	1,264	647	445	–	–
24	14	–	499	40	126	–	433	7	–
35	9	8	854	29	125	325	250	–	–
[3] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –
38	24	3	319	58	89	55	85	39	–
12	78	3	203	12	81	46	84	28	–
GROUP II—Cities having a Population of 50,000 to 100,000.									
–	31	–	329	37	[2] –	[2] –	[2] –	424	[2] –
17	52	2	305	26	–	170	85	50	–
4	23	1	214	34	59	34	14	6	–
6	–	–	–	211	6	26	175	32	–
6	10	–	159	–	145	30	93	2	–
11	6	1	110	–	50	49	12	26	–
GROUP III—Cities having a Population of 25,000 to 50,000.									
3	10	1	125	3	inc. with c. streams	65	29	20	3
2	20	23	90	1	29	2	36	86	–
–	14	–	26	26	20	4	25	23	–
6	9	–	6	9	9	–	12	4	–
87	21	–	85	–	51	13	49	6	–
10	3	–	189	8	69	2	62	7	–
20	68	–	–	7	1	80	–	22	–
4	15	–	65	4	34	–	25	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.									
6	28	–	10	1	21	–	22	8	9
5	14	1	40	11	39	16	4	19	–
[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –
–	11	–	134	18	77	13	24	8	69
10	25	1	79	17	48	7	53	18	–
–	6	–	41	–	20	26	20	11	–
6	16	–	102	24	40	7	41	2	–
5	6	–	18	13	24	1	20	3	–
–	52	–	–	5	11	2	–	14	–
[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –	[1] –
–	–	–	–	–	–	–	–	–	–
–	8	–	51	6	4	17	7	3	–
–	–	–	–	–	9	7	7	9	–
–	15	–	4	60	37	4	41	5	–
10	10	1	15	5	15	10	15	5	–
–	26	–	161	10	6	21	51	11	–
5	6	–	30	6	10	9	24	1	–
9	24	–	49	5	–	4	13	8	–
–	12	–	–	17	8	–	30	–	–
–	7	–	1	23	11	–	24	–	–
–	–	–	21	1	[1] –	[1] –	[1] –	[1] –	[1] –
4	9	1	14	6	6	–	41	–	–
2	42	–	54	2	15	40	39	10	–
–	–	–	–	–	–	–	–	35	–
6	7	–	26	1	[1] –	[1] –	[1] –	[1] –	[1] –
–	–	–	14	13	7	11	11	2	–
1	2	–	67	–	31	–	13	5	20
–	23	–	6	1	[1] –	[1] –	[1] –	[1] –	[1] –
1	3	–	31	15	2	11	18	10	–
–	53	–	13	7	75	–	4	–	–
–	4	–	23	–	10	–	11	–	–
5	35	–	–	4	2	–	15	–	–

[2] Included with chemical and water streams.

TABLE 4—Fire and Police Departments.—*Continued.*

Name of City or Town	Loss on Property		Insurance on Property		Police Department			
					Constables			
	Buildings	Contents	Buildings	Contents	On beat or post	Mounted on bicycle	Mounted on horses	Mounted on motor-cycle
	$	$	$	$	No.	No.	No.	No.
GROUP I—Cities having a Population of over 100,000.								
Montreal, Que.	815,649	769,232	–	–	647	–	5	18
Toronto, Ont.	[6]	1,522,856	[6]	1,337,010	229	75	18	20
Winnipeg, Man.	173,923	256,511	5,775,035	5,091,896	130	–	–	8
Vancouver, B.C.	167,142	436,516	2,698,400	3,877,778	117	–	2	5
Quebec, Que.	255,628	433,517	2,765,015	1,505,300	74	–	6	–
Hamilton, Ont.	84,258	[4] 167,374	1,016,119	[2] 336,595	72	–	–	2
Ottawa, Ont.	71,202	103,078	2,101,540	1,404,803	41	5	2	3
GROUP II—Cities having a Population of 50,000 to 100,000.								
Calgary, Alta.	46,374	96,574	1,634,600	[7] 753,525	43	–	4	–
Edmonton, Alta.	[6] –	165,527	5,481,705	[7] –	34	1	3	1
Halifax, N.S.	[6] –	166,443	[4] –	902,990	62	–	–	–
St. John, N.B.	[6] –	200,000	[3] –	[3] –	43	–	1	–
London, Ont.	31,813	61,081	1,375,450	1,647,950	37	–	–	–
Victoria, B.C.	33,982	49,672	863,470	925,975	37	–	–	2
GROUP III—Cities having a Population of 25,000 to 50,000.								
Regina, Sask.	20,324	15,692	557,450	329,925	23	1	–	1
Brantford, Ont.	18,287	15,265	581,700	894,000	12	[5] 7	–	1
Windsor, Ont.	23,506	65,000	389,350	351,460	21	–	–	2
Verdun, Que.	10,935	7,393	7,000	4,400	17	–	–	1
Hull, Que.	7,008	4,083	66,275	12,825	10	–	–	–
Saskatoon, Sask.	18,489	397,493	124,800	1,419,572	6	–	–	1
Sydney, N.S.	95,000	22,000	–	–	12	–	–	–
Three Rivers, Que.	26,003	15,227	102,910	30,730	[2] 22	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.								
Kingston, Ont.	30,665	24,761	214,700	96,700	9	–	–	–
Moosejaw, Sask.	7,869	22,386	[3] –	[3] –	10	–	1	–
Sherbrooke, Que.	87,421	[7] –	730,700	[7] –	10	–	–	–
Peterborough, Ont.	11,402	24,576	–	–	[7] –	–	–	–
Sault Ste. Marie, Ont.	23,472	41,519	243,200	148,000	10	3	–	2
Kitchener, Ont.	11,848	21,614	522,887	736,980	5	–	–	–
Fort William, Ont.	245,150	218,154	529,650	339,200	11	–	–	–
St. Catharines, Ont.	36,914	35,968	84,400	103,400	6	–	–	–
St. Thomas, Ont.	[6] –	7,106	[6] –	6,801	1	–	–	–
Westmount, Que.	[3] –	–	[3] –	[3] –	12	–	1	–
Moncton, N.B.	–	–			12	–	–	–
Stratford, Ont.	7,924	25,323	106,425	140,500	4	–	–	–
Guelph, Ont.	–	–	66,375	147,178	6	–	–	–
Lachine, Que.	[6] –	20,967	[6] –	104,575	14	–	–	–
New Westminster, B.C.	[6] –	8,866	[6] –	491,000	6	–	–	–
Port Arthur, Ont.	91,493	44,349	4,024,750	8,331,405	10	–	–	–
Sarnia, Ont.	10,552	6,850	67,000	3,300	3	1	–	–
Brandon, Man.	5,865	3,451	314,100	18,850	6	1	–	–
Niagara Falls, Ont.	27,214	33,594	21,214	27,894	8	–	–	–
Outremont, Que.	16,928	6,365	–	–	20	–	–	2
Galt, Ont.	30,000	18,000	41,231	[7] –	3	–	–	–
Belleville, Ont.	[6] –	10,614	[6] –	74,800	4	–	–	–
St. Boniface, Man.	5,000	7,660	–	–	4	–	–	–
Charlottetown, P.E.I.	[3] –	[3] –	[3] –	[3] –	4	–	–	–
Lethbridge, Alta.	[6] –	27,390	[6] –	10,030	6	1	–	–
New Glasgow, N.S.	12,000	12,000	12,325	12,100	4	–	–	–
Owen Sound, Ont.	[6] –	299,300	180,750	116,000	4	–	–	–
Amherst, N.S.	1,935	2,700	[3] –	[3] –	2	–	–	–
Medicine Hat, Alta.	11,800	6,050	11,890	6,050	3	–	–	–
St. Hyacinthe, Que.	1,000	3,000	1,000	3,000	10	–	–	–
Woodstock, Ont.	9,159	11,611	21,000	27,825	3	–	–	–
Levis, Que.	5,000	600	3,600	600	10	–	–	–

[1] Combination patrol-ambulance. [2] These men are also firemen. [3] No record. [4] Including blanket loss on buildings and contents [5] Seven of the regulars mounted at night. [6] Included with contents. [7] Included with buildings

TABLE 4—Fire and Police Departments.—*Concluded.*

Police Department.										
						Patrols		Ambulances		
Detectives	Sergeants	Total staff, including Chief, etc.	Horses	Bicycles	Motor-cycles	Motor propelled	Horse drawn	Motor pro-pelled	Horse drawn	Auto-mobiles
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
GROUP I—Cities having a Population of over 100,000.										
42	63	1,047	38	–	20	5	12	1	–	7
26	36	654	21	75	20	5	–	3	–	15
29	8	214	–	9	8	2	–	1	–	2
16	16	205	2	–	5	1	–	1	–	3
6	26	118	6	–	–	–	1	1	1	–
10	11	110	1	6	2	1	2	1	2	–
7	6	78	2	27	4	1	–	–	–	3
GROUP II—Cities having a Population of 50,000 to 100,000.										
12	8	71	5	–	2	1	–	–	–	1
12	9	73	5	3	2	1	–	–	–	1
3	7	72	–	–	–	1	–	–	–	–
3	8	55	1	–	–	1	–	1	–	–
3	5	48	–	–	–	1	–	–	–	1
7	6	85	–	–	–	–	–	1	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.										
4	6	39	–	9	2	1	–	–	–	1
3	3	21	–	7	1	–	–	–	–	–
3	3	36	–	3	2	1	–	–	–	1
–	1	23	1	1	1	–	1	–	1	1
3	2	17	1	2	–	–	1	–	1	1
3	4	25	–	1	1	1	–	–	–	1
1	5	20	–	–	–	1	–	–	–	–
2 1	2 2	32	1	–	–	–	1	1	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.										
–	2	12	–	2	–	–	–	–	–	–
1	2	14	1	3	–	–	–	–	–	–
–	3	14	2	–	–	–	2	–	1	1
2	3	14	–	4	–	–	–	–	–	–
1	1	18	–	3	2	1	–	–	–	1
–	1	6	–	5	–	–	–	–	–	1
–	2	16	–	–	–	–	–	–	–	1
1	1	9	–	2	–	–	–	–	–	–
–	–	8	–	1	–	–	–	1	1	–
3	2	21 [3]	–	–	–	1	1	–	–	1
–	1	14	–	–	–	1	–	1	–	–
1	2	–	–	–	–	–	–	–	–	–
1	1	9	–	2	–	–	–	–	–	–
–	–	15	–	–	–	1	1	–	–	2
1	2	10	–	–	–	–	–	1	–	1
–	3	13	–	–	1	1	–	–	2	–
–	–	8	–	2	–	–	–	–	–	–
1	1	10	–	5	–	–	–	–	–	–
–	2	10	–	1	–	–	–	1	–	–
1	1 2	24	1	2	2	–	1	–	–	–
–	1	5	–	–	–	–	–	1	–	–
–	3	7	–	1	–	–	–	–	1	1
1	2	8	–	6	–	–	–	–	–	1
–	4	8	–	–	–	–	–	–	–	–
2	1	12	–	1	1	–	–	1	1	–
–	1	5	–	–	–	–	–	–	–	–
–	–	4	–	4	–	–	–	–	1	–
–	–	3	–	–	–	–	–	–	1	–
1	2	10	–	–	–	–	–	–	–	1
–	–	10	1	–	–	–	1	–	1	–
–	–	4	–	2	–	–	–	–	–	–
–	–	12	9	–	–	–	1	–	–	–

[3] Same as used for fire department.

TABLE 5.—RECEIPTS.

Name of City or Town	Compulsory Taxation.			
	General Property Tax			
	Levy for Current Year	Arrears, inc. Penalties and Interest Thereon	Local Improvement	Other Property Tax
	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.				
Montreal, Que	7,827,396 21	4,240,921 44	–	–
Toronto Ont	[1] –	[1] –	[1] –	[1] –
Winnipeg, Man	5,428,540 96	240,000 00	1,103,833 60	6,810 75
Vancouver, B.C	3,063,906 79	353,493 73	412,327 94	–
Quebec, Que	1,140,719 33	205,530 56	–	–
Hamilton, Ont	2,332,052 00	279,610 00	140,514 00	–
Ottawa, Ont	2,454,967 00	12,702 32	300,299 76	68,168 10
GROUP II—Cities having a Population of 50,000 to 100,000.				
Calgary, Alta	2,736,987 51	237,096 77	421,439 91	–
Edmonton, Alta	2,294,896 00	1,068,198 60	–	–
Halifax, N.S	594,914 66	155,123 31	42,017 33	21,270 03
St. John, N.B	854,683 42	43,078 15	–	67,849 04
London, Ont	648,697 23	115,131 50	123,522 80	–
Victoria, B.C	955,378 48	310,763 84	–	37,354 73
GROUP III—Cities having a Population of 25,000 to 50,000.				
Regina, Sask	904,100 23	404,566 22	146,057 07	768,006 87
Brantford, Ont	436,792 00	–	91,743 00	–
Windsor, Ont	693,267 31	5,399 42	139,450 53	4,024 94
Verdun, Que	110,971 84	65,919 47	7,208 31	56,597 53
Hull, Que	160,602 90 [4]	–	[4] –	–
Saskatoon, Sask	588,731 38	264,541 74	125,734 69	–
Sydney, N.S	271,806 66	51,406 85	–	–
Three Rivers, Que	160,651 99	32,215 51	37,047 89	966 76
GROUP IV—Cities having a Population of 10,000 to 25,000.				
Kingston, Ont	310,405 63	1,000 00	24,362 60	–
Moosejaw, Sask	329,350 51	165,913 98	57,116 95	–
Sherbrooke, Que	229,383 12	91,817 90	–	–
Peterborough, Ont	373,116 93	5,157 23	35,890 34	11,381 39
Sault Ste. Marie, Ont	233,682 45	108,408 37	54,874 67	12,500 00
Kitchener, Ont	245,111 80	20,850 50	93,736 00	8,641 55
Fort William, Ont	852,466 57	85,359 89	–	392 80
St. Cathbrines, Ont	553,864 45	34,334 17	[4] –	998 72
St. Thomas, Ont	300,253 00	62,180 46	–	–
Westmount, Que	490,813 95	124,886 66	43,666 11	75,510 09
Moncton, N.B	399,172 80	24,895 17	–	–
Stratford, Ont	370,373 73	2,275 92	58,171 79	–
Guelph, Ont	281,226 66	–	–	–
Lachine, Que	182,434 38	67,658 30	–	–
New Westminster, B.C	407,832 00	33,469 04	72,940 33	–
Port Arthur, Ont	368,016 95	21,216 44	137,761 45 [10]	80,615 09
Sarnia, Ont	295,685 69	53,564 75	–	–
Brandon, Man	331,605 83	232,510 25	72,140 89	–
Niagara Falls, Ont	239,500 39	30,412 95	35,201 93	–
Outremont, Que	[11] 148,759 85 [11]	7,828 33 [11]	70,300 44 [11]	49,865 47
Galt, Ont	215,835 71	37,934 40	31,760 77	–
Belleville, Ont	273,829 26	59,031 45	–	–
St. Boniface, Man	[12] 510,815 78	82,080 23 [12]	126,244 29	–
Charlottetown, P.E.I	114,000 00	–	–	–
Lethbridge, Alta	320,635 60	31,389 75	32,589 70	5,131 89
New Glasgow, N.S	67,103 38	16,017 92	7,781 91	–
Owen Sound, Ont	122,013 36	233,188 53	14,938 07	1,058 50
Amherst, N.S	95,682 19	19,852 07	11,208 42	–
Medicine Hat, Alta	195,856 73	261,553 58	24,110 78	–
St. Hyacinthe, Que	40,244 92	–	72 62	19,006 00
Woodstock, Ont	106,663 48	96 81	24,575 68	–
Levis, Que	31,735 42	12,643 87	–	–

[1] Not separated see total taxation. [2] Not separated see total licenses. [3] With Business issuing licenses
[4] Included in Levy for current year. [5] Based on floor space. [6] Amusement Tax. [7] Included in Poll Tax

TABLE 5.—RECEIPTS—*Continued.*

Compulsory Taxation					Licenses				
Other Special Taxes							Non-business		
Poll Tax	Income Tax	Rental Taxation	Other Special Taxation	Total Compulsory Taxation	Business Issuing Licenses	Business Not Issuing Licenses	Dog Licenses	Other General Licenses	Total Licenses.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.									
– –	–	1,267,302 44	45,029 63	13,380,649 72	4,984 00	202,981 17	36,842 00	286,607 67	531,414 84
1 –	1 –	1 –	1 –	20,032,032 58	2 –	2 –	2 –	2 –	121,086 45
– –	–	375,436 00	619,895 42	7,534,516 73	2 –	2 –	2 –	2 –	111,430 00
– –	–	–	–	3,811,728 46	196,126 34	3 –	2,845 75	–	198,972 09
– –	–	–	–	1,346,249 89	15,897 60	–	–	44,326 75	60,224 35
16,660 00	–	2,722 00	–	2,971,558 00	–	–	2,164 00	22,080 00	24,244 00
–	145,827 92	237,880 31	–	3,219,845 41	–	–	4,427 00	28,885 00	33,312 00
GROUP II—Cities having a Population of 50,000 to 100,000.									
– –	–	–	–	3,395,524 19	–	–	4,226 00	40,957 21	45,183 21
–	106,837 64	156,992 35	–	3,726,924 59	39,680 20	–	5,240 50	1,103 75	46,024 45
5,060 00	–	2,000 00	36,500 00	856,325 33	6,000 00	–	2,000 00	22,000 00	30,000 00
– –	–	–	–	965,610 61	–	–	1,178 00	21,185 09	22,363 09
3,130 00	57,364 72	413 26	–	948,259 51	–	–	4,332 00	12,724 75	17,056 75
– –	–	–	7,570 00	1,311,067 05	–	–	3,783 50	44,195 50	47,979 00
GROUP III—Cities having a Population of 25,000 to 50,000.									
763 00	–	–	1,058 47	2,224,551 86	–	–	1,003 00	16,474 00	17,477 00
2,240 00	32,840 00	–	–	563,615 00	3,718 00	–	824 00	–	4,542 00
– –	–	–	–	842,142 20	–	–	2,023 00	2,934 25	4,957 25
– –	–	–	–	240,697 15	9,596 25	7,938 46	2 –	–	17,444 71
– –	–	7,869 62	8,003 83	176,476 35	6,831 33	–	351 00	–	7,182 33
1,779 00	4,491 54	–	–	935,378 35	22,216 65	39,916 48	1,876 00	–	64,009 13
46,000 00	4 –	–	–	369,213 51	–	–	300 00	1,750 00	2,050 00
2,521 45	–	12,817 56	10,936 99	257,158 15	14,194 25	–	1,068 00	5,195 00	20,457 25
GROUP IV—Cities having a Population of 10,000 to 25,000.									
2,942 00	59,543 60	651 45	21,420 06	420,325 34	–	–	–	6,427 00	6,427 00
1,240 00	1,925 99	–	28,179 37	383,726 80	55,260 79	3 –	2,763 35	10,301 40	68,325 54
1,214 70	–	10,895 61	13,479 92	345,791 25	20,473 23	16,020 67	488 00	2,338 30	39,320 20
2,605 00	15,973 55	42,248 64	421 96	487,795 09	–	–	606 00	4,188 00	4,794 00
4,244 00	87,622 04	974 00	556 58	502,872 11	5,761 50	–	892 00	–	6,653 50
2,775 00	11,995 94	–	–	383,110 79	–	–	861 00	2,177 05	3,038 05
5,830 00	7 –	–	3,680 62	947,729 88	–	–	–	7,336 10	7,336 10
2,774 00	4 –	–	14 –	14 –	–	–	1,415 60	6,033 75	7,449 35
1,030 00	–	–	308 52	363,771 98	1,745 50	3 –	300 00	–	2,045 50
– –	–	–	3,197 92	738,074 73	1,904 50	6,450 10	1,380 25	–	9,734 85
– –	–	–	–	424,068 57	–	–	440 00	3,050 32	3,490 32
870 00	1,608 37	–	12,095 55	445,395 36	2,970 50	–	–	–	2,970 50
2,430 00	–	–	–	283,656 66	–	–	1,090 30	3,144 75	4,235 05
– –	–	–	12,704 85	262,797,53	–	–	900 00	7,994 15	8,894 15
– –	–	–	9 1,465 60	515,706 97	7,950 50	–	565 00	–	8,515 50
4,830 00	–	–	–	612,439 93	–	–	1,152 45	3,320 00	4,472 45
400 00	–	–	–	349,650 44	–	–	445 00	2,893 34	3,338 34
– –	–	24,354 10	2,100 00	662,811 77	5,587 25	–	1,685 75	–	7,273 00
1,605 00	–	–	–	306,720 27	2,385 00	–	880 00	–	3,265 00
– –	–	11,189 65	–	287,532 40	1,196 50	2,490 87	594 00	–	4,283 37
1,050 00	42,601 51	225 00	–	329,407 39	–	–	832 95	1,652 77	2,485 72
800 00	–	–	–	333,660 71	–	–	434 00	4,027 20	4,461 20
– –	–	–	–	712,580 12	2 –	2 –	2 –	2 –	3,859 50
4,000 00	–	–	–	118,000 00	–	–	480 00	17,000 00	17,480 00
1,291 50	–	–	–	390,928 44	–	–	2 –	6,375 96	6,375 96
2,740 45	1,457 50	–	–	95,101 16	–	–	826 00	891 00	1,717 00
454 00	1,171 00	–	13 1,004 64	373,828 10	1,731 97	–	410 10	–	2,142 07
5,127 59	4 –	–	–	131,870 27	–	–	323 00	231 65	554 65
– –	–	–	13,377 35	494,898 44	–	–	1,259 00	5,310 50	6,569 50
962 10	–	16,886 56	13,408 18	90,574 44	10,120 00	–	486 00	–	10,606 00
390 00	4 –	–	–	131,725 97	–	–	698 00	1,434 75	2,132 75
2,886 55	–	11,278 66	947 88	59,492 38	5,241 00	3,420 98	172 00	–	8,833 98

[8] Including Commutation taxes. [9] Road Tax. [10] Including Prov. War Tax, Patriotic Purposes Tax, Hospitals, Parks and Libraries. [11] Less abatements of $411.34. [12] Less discount of $6,560.18. [13] Railway Tax. [14] Not given.

TABLE 5.—RECEIPTS—*Continued.*

Name of City or Town	Fees.			
		Highway Privileges or		
	Building and Construction Permits	Electric Railway Co's	Electric Light and Power Co's	Gas Companies
	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.				
Montreal, Que	4,008 50	-	[1] 38,292 75	-
Toronto, Ont	-	-	567,013 35	-
Winnipeg, Man	3,220 50	106,500 00	-	-
Vancouver, B.C	2,833 11	-	86,447 93	-
Quebec, Que	-	-	-	-
Hamilton, Ont	2,566 00	75,935 00	59,077 00	-
Ottawa, Ont.	-	16,452 85	-	-
GROUP II—Cities having a Population of 50,000 to 100,000.				
Calgary, Alta	1,289 70	-	-	-
Edmonton, Alta	1,243 00	-	-	-
Halifax, N.S	-	-	-	-
St. John, N.B	770 00	14,400 00	12,541 87	-
London, Ont	-	-	-	-
Victoria, B.C..	2,258 28	-	-	-
GROUP III—Cities having a Population of 25,000 to 50,000.				
Regina, Sask	788 10	-	-	-
Brantford, Ont	1,651 00	-	-	-
Windsor, Ont	2,861 30	1,000 00	-	-
Verdun, Que	252 70	-	-	-
Hull, Que	-	-	-	-
Saskatoon, Sask	2,204 85	-	-	-
Sydney, N.S	-	2,250 00	-	-
Three Rivers, Que	215 50	-	-	-
GROUP IV—Cities having a Population of 10,000 to 25,000.				
Kingston, Ont	-	-	-	-
Moosejaw, Sask	735 40	-	-	-
Sherbrooke, Que	309 25	-	-	-
Peterborough, Ont	-	-	-	-
Sault Ste. Marie, Ont	1,094 00	-	-	-
Kitchener, Ont	-	-	-	-
Fort William, Ont	500 00	-	-	-
St. Catharines, Ont.	1,293 60	-	-	-
St. Thomas, Ont	-	-	-	-
Westmount, Que	1,182 50	-	-	-
Moncton, N.B.	-	-	-	-
Stratford, Ont	785 49	-	-	-
Guelph, Ont	-	-	-	-
Lachine, Que	426 25	-	-	-
New Westminster, B.C	237 05	-	1,000 00	-
Port Arthur, Ont	325 25	-	-	-
Sarnia, Ont	826 14	-	-	-
Brandon, Man	-	-	-	-
Niagara Falls, Ont	162 00	-	-	-
Outremont, Que.	465 00	-	-	-
Galt, Ont	-	1,140 00	-	-
Belleville, Ont	-	-	-	-
St. Boniface, Man	453 25	-	-	-
Charlottetown, P.E.I	75 00	-	-	-
Lethbridge, Alta	70 00	-	-	-
New Glasgow, N.S	-	649 04	-	-
Owen Sound, Ont	83 00	-	-	-
Amherst, N.S.	-	-	-	-
Medicine Hat, Alta	222 10	-	-	-
St. Hyacinthe, Que	-	-	6,027 00 [1]	-
Woodstock, Ont	148 50	-	-	-
Lævis, Que	33 00	-	-	-

[1] Under this heading are placed rentals, of conduits under streets occupied by Electric Light and Power Co's.

TABLE 5.—RECEIPTS—*Continued.*

Fees.			Fines, Forfeits and Escheats			
Franchises						
Telegraph and Telephone Companies	Other Privileges or Franchises	Total Fees for Permits, Privileges or Franchises	Court Fines and Forfeits	Commercial Forfeits and Escheats	Total Fines, Forfeits and Escheats	Sales, Rentals and Leases of Buildings or Lands
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.						
–	5,801 13	48,102 38	275,224 36	–	275,224 36	88,617 17
–	1,251,873 38	1,818,886 73	326,838 62	–	326,838 62	289,234 78
–	–	109,720 50	30,000 00	–	30,000 00	800 00
–	18,982 06	108,263 10	130,092 93	–	130,092 93	14,294 85
–	–	–	11,777 55	–	11,777 55	–
–	5,147 00	142,725 00	65,291 00	–	65,291 00	10,297 00
–	–	16,452 85	40,097 00	–	40,097 00	5,921 66
GROUP II—Cities having a Population of 50,000 to 100,000.						
–	16,941 24	18,230 94	9,611 47	–	9,611 47	11,444 36
–	–	1,243 00	7,646 19	–	7,646 19	9,884 01
–	– [4]	– [4]	6,500 00	–	6,500 00 [4]	–
–	–	27,714 87	6,121 66	–	6,121 66	18,875 52
–	–	–	24,466 94	–	24,466 94	8,623 54
–	–	2,258 28	–	–	14,841 96	2,970 00
GROUP III—Cities having a Population of 25,000 to 50,000.						
–	–	788 10	6,661 15	–	6,661 15	75,196 71
–	–	1,651 00	8,552 00	–	8,552 00	760 00
–	–	3,861 30	17,369 83	–	17,369 83	1,400 00
–	–	252 70	3,644 20	–	3,644 20	–
–	–	–	5,609 00	–	5,609 00	–
–	539 00	2,743 85	3,852 00	–	3,852 00	4,186 00
–	–	2,250 00	30,000 00	–	30,000 00	–
–	–	215 50	3,663 48	–	3,663 48	8,014 67
GROUP IV—Cities having a Population of 10,000 to 25,000.						
–	–	–	6,638 15	–	6,638 15	5,927 73
–	–	735 40	3,732 35	–	3,732 35	2,032 92
–	–	309 25	2,687 50	–	2,687 50	381 58
–	–	–	4,624 80	–	4,624 80	245 35
–	548 40	1,642 40	34,418 75	–	34,418 75	115 84
–	–	–	6,841 25	–	6,841 25	–
–	–	500 00	33,804 86	–	33,804 86	–
–	–	–	5,767 86	–	5,767 86	399 04
–	–	–	3,981 25	–	3,981 25	3,815 67
–	602 88	1,785 38	1,947 50	–	1,947 50	1,175 50
–	–	–	6,081 75	–	6,081 75	–
–	–	785 49	1,768 87	–	1,768 87	2,260 20
–	–	–	4,744 55	–	4,744 55	–
–	–	426 25	2,063 65	–	2,063 65	–
–	–	1,237 05	8,271 95	–	8,271 95	36,236 31
–	–	325 25	16,476 75	–	16,476 75	2,325 67
–	–	826 14	2,262 85	–	2,262 85	1,072 00
–	–	–	276 00	–	276 00	1,676 48
–	–	162 00	16,431 00	–	16,431 00	750 00
112 00	–	577 00	551 21	2 00	553 21	2,120 05
–	–	1,140 00	1,683 25	–	1,683 25	300 00
–	–	–	2,714 61	–	2,714 61	1,041 70
–	–	453 25	399 55	–	399 55	4,300 00
–	–	75 00	1,500 00	–	1,500 00	–
–	–	70 00	1,968 68 [2]	1,065 60	3,034 28	570 00
–	–	649 04	9,536 42	–	9,536 42	–
–	–	83 00	1,791 52	4 43	1,795 95	1,058 09
–	–	–	424 00	–	424 00	1,867 00
–	–	222 10	764 50	–	764 50	–
300 00	–	6,337 00	960 45	–	960 45	–
–	–	148 50	2,326 95	–	2,326 95	–
–	–	33 00	367 00	–	367 00	3,219 00

[2] Pound. [3] Included in Elect. Light and Power Co's. [4] Included in other general licenses.

TABLE 5.—RECEIPTS—*Continued.*

Name of City or Town.	Municipally Owned Public Services.			
	Street Railways	Waterworks System.	Electric Light and Power.	Gas System.
	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.				
Montreal, Que.	–	2,082,707 73	–	–
Toronto, Ont.	448,756 41	2,777,686 89	–	–
Winnipeg, Man	–	–	–	–
Vancouver, B.C.	–	436,241 35	–	–
Quebec, Que.	–	499,404 82	–	–
Hamilton, Ont.	–	435,310 00	–	–
Ottawa, Ont.	–	380,073 56	299,883 00	–
GROUP II—Cities having a Population of 50,000 to 100,000.				
Calgary, Alta.	834,413 40	420,725 06	727,231 11	–
Edmonton, Alta.	682,713 19	401,399,75	610,744 34	–
Halifax, N.S.	–	–	–	–
St. John, N.B.	–	222,347 52	–	–
London, Ont	–	[5] –	44,361 93	–
Victoria, B.C.	–	217,163 66	1,037 48	–
GROUP III—Cities having a Population of 25,000 to 50,000.				
Regina, Sask.	310,495 52	146,956 77	463,010 10	–
Brantford, Ont.	148,277 00	110,885 00	125,299 00	–
Windsor, Ont.	–	–	–	–
Verdun, Que.	–	75,937 08	68,049 67	–
Hull, Que.	–	83,748 74	–	–
Saskatoon, Sask.	252,032 82	132,828 12	392,488 60	–
Sydney, N.S.	–	63,710 00	–	–
Three Rivers, Que.	–	70,723 82	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.				
Kingston, Ont.	–	–	–	–
Moosejaw, Sask.	–	140,884 71	270,560 82	–
Sherbrooke, Que.	–	78,679 42	216,095 49	53,357 12
Peterborough, Ont	–	66,880 19	127,401 70	–
Sault Ste. Marie, Ont.	–	[5] –	203,759 37	–
Kitchener, Ont.	986 14	–	–	–
Fort William, Ont.	177,561 87	106,236 44	124,929 28	86,303 32
St. Catharines, Ont.	–	77,651 76	107,989 92	10,370 47
St. Thomas, Ont.	24,294 99	55,658 72	116,352 55	132,384 00
Westmount, Que.	–	–	173,438 35	–
Moncton, N.B.	–	76,448 33	–	–
Stratford, Ont.	–	–	–	–
Guelph, Ont.	–	–	–	–
Lachine, Que.	–	40,088 51	58,553 96	–
New Westminster, B.C.	–	87,423 72	82,931 18	–
Port Arthur, Ont.	–	–	–	–
Sarnia, Ont.	–	56,724 35	125,303 00	–
Brandon, Man.	37,632 42	82,376 64	–	–
Niagara Falls, Ont.	–	51,425 68	82,991 65	–
Outremont, Que.	[10] –	[10] –	[10] –	[10] –
Galt, Ont.	–	49,247 09	103,779 51	–
Belleville, Ont	–	35,975 75	–	42,223 39
St. Boniface, Man	–	20,162 25	–	–
Charlottetown, P.E.I.	–	–	–	–
Lethbridge, Alta.	56,416 48	105,857 83	172,016 79	–
New Glasgow, N.S.	–	37,741 54	–	–
Owen Sound, Ont.	–	26,902 16	70,649 06	37,262 15
Amherst, N.S.	–	27,929 40	–	–
Medicine Hat, Alta.	–	88,626 99	7,562 12	169,695 05
St. Hyacinthe, Que.	–	59,367 00	6,000 00	–
Woodstock, Ont.	–	[12] 34,464 25	59,064 67	–
Levis, Que.	–	49,658 45	–	–

[1] Included in By County. [2] Including Exhibition, etc. [3] Including Exhibitions and Telephones. [4] Including Miscellaneous Receipts for Education. [5] Included in Elect. Light and Power. [6] Including interest and sinking funds. [7] Including Cemeteries and Water Delivery. [8] Including Ferry.

TABLE 5.—RECEIPTS—*Continued.*

Municipally Owned Public Services.				Education				
Markets and Weigh Scales.	Docks and Wharves	Other Public Services.	Total Public Services.	Grants and Subventions		Pupils Fees.	School Taxes or Assessment	Total Education
				By Province.	By County.			
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.								
170,974 57	–	–	2,253,682 30	–	–	–	–	–
269,848 42	–	[2]175,007 49	3,671,299 21	104,382 08	–	53,815 62	3,650,000	3,808,197 70
5,000 00	–	–	5,000 00	–	–	–	–	–
3,323 44	–	–	439,564 79	225,215 00	–	–	–	225,215 00
–	–	–	490,404 82	–	–	–	–	–
12,015 00	–	–	447,325 00	[1] –	26,770 06	16,267 70	740,064 00	783,101 76
23,753 63	–	–	703,710 19	–	–	–	884,219 00	884,219 00
GROUP II—Cities having a Population of 50,000 to 100,000.								
17,426 44	–	175,114 75	2,174,910 76	–	–	–	–	–
8,111 00	–	[3]454,198 12	2,187,166 40	67,185 30	–	5,779 15	–	[4] 105,873 69
–	–	–	–	27,838 20	–	390 00	–	28,228 20
18,758 62	159,442 61	44,350 42	444,899 17	–	–	–	–	–
17,257 43	–	205,484 52	267,103 88	29,679 28	–	10,351 07	[6] 492,825 13	532,855 48
7,953 42	–	9,837 00	233,991 56	81,841 60	6,981 49	5,262 50	–	94,085 59
GROUP III—Cities having a Population of 25,000 to 50,000.								
680 50	–	–	921,142 89	20,653 64	–	129 30	395,056 23	415,839 17
5,689 00	–	–	390,150 00	8,464 00	6,970 00	4,152 00	163,697 00	183,283 00
3,411 26	–	–	3,411 26	11,188 92	–	13,689 25	267,375 95	[4] 299,670 25
–	–	–	143,986 75	–	–	–	–	–
–	–	–	83,748 74	–	–	–	–	–
5,119 85	–	[7] 29,761 40	812,230 79	41,993 07	–	389 75	448,544 48	[4] 491,727 30
–	–	–	63,710 00	2,190 98	8,275 49	200 00	111,922 12	122,588 59
6,158 42	–	[8] 35,788 73	112,670 97	–	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.								
730 54	–	–	730 54	6,381 00	–	9,144 00	–	15,525 00
1,622 75	–	–	413,068 28	22,121 66	–	–	186,920 94	[4] 212,267 59
19,216 21	–	107,686 33	475,034 57	–	–	–	–	–
724 96	–	–	195,006 85	6,070 87	–	6,430 55	124,500 00	137,001 42
48 00	–	664 22	204,471 59	–	–	–	205,087 04	205,087 04
3,345 84	–	–	4,331 08	5,323 37	3,592 59	3,602 30	117,936 26	130,454 52
338 45	–	4,497 57	499,866 93	–	–	–	–	–
726 00	–	36,200 71	232,938 56	2,900 07	4,272 12	2,152 00	159,235 18	168,559 37
600 00	–	8,903 49	338,193 75	–	3,693 35	–	–	[4] 5,855 49
–	–	–	173,438 35	–	–	–	–	–
3,604 00	–	–	80,052 33	–	3,038 32	42 00	96,837 60	99,917 92
593 15	–	–	593 15	–	–	–	–	–
1,538 00	–	–	1,538 00	3,710 29	2,595 23	[9] –	[9] –	102,154 81
–	–	–	98,642 47	–	–	–	–	–
2,913 69	2,319 50	9,920 78	155,508 87	35,918 00	–	3,532 35	–	39,450 35
273 55	–	–	273 55	–	–	–	115,657 69	115,657 69
1,399 70	–	–	183,427 05	2,479 90	2,999 66	1,462 00	77,432 10	84,373 66
1,019 60	–	3,882 31	124,910 97	13,970 50	–	798 00	123,000 00	[4] 138,911 15
859 42	–	–	135,276 75	683 74	–	–	52,500 00	53,183 74
–	–	–	–	–	–	–	–	–
1,084 53	–	–	154,111 15	–	–	–	74,145 17	74,145 17
2,212 00	37 08	3,493 54	83,941 76	2,557 43	11,606 87	4,203 52	[12] –	18,367 82
110 00	–	–	20,272 25	–	–	–	–	–
5,238 00	–	–	5,238 00	–	–	–	–	–
586 05	–	[11] 20,432 54	355,389 69	1,000 00	–	–	119,005 90	120,005 90
80 15	–	–	37,821 69	1,196 45	2,835 08	280 50	36,093 50	40,405 53
100 00	419 52	–	135,332 89	5,128 65	6,701 40	2,819 95	83,137 42	97,788 42
–	–	–	27,929 40	810 80	3,655 41	15 00	28,500 00	[4] 35,850 79
1,785 65	–	–	277,669 81	–	–	–	–	–
5,889 00	–	–	71,256 00	–	–	–	–	–
1,933 69	–	5,862 04	101,324 65	2,088 39	5,636 74	5,090 52	54,726 91	67,542 56
589 45	3,376 00	–	53,623 90	–	–	–	–	–

[9] Not separated see Total Education. [10] Property of Montreal Tramways, Light, Heat and Power Co's. [11] Coal Mine. [12] Including Hydrant Rental. [13] Included in Levy for Current Year.

TABLE 5.—RECEIPTS—*Continued.*

Name of City or Town.	Pensions or Superannuation Assessments.				
	Teachers and School Employees.	Fire Brigade.	Police.	Other Civic Employees.	Total Pensions or Superannuation Assessments.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.					
Montreal, Que.	–	–	–	–	–
Toronto, Ont.	61,208 89	36,369 06	65,638 62	–	163,216 57
Winnipeg, Man.	–	–	–	–	–
Vancouver, B.C.	–	–		–	–
Quebec, Que.	–	–	–	–	–
Hamilton, Ont.	–	–	–	–	–
Ottawa, Ont.	–	–	–	–	–
GROUP II—Cities having a Population of 50,000 to 100,000.					
Calgary, Alta.	–	–	–	–	–
Edmonton, Alta.	–	–	–	–	–
Halifax, N.S.	–	–	–	–	–
St. John, N.B.	–	–	–	–	–
London, Ont.	–	7,296 99	–	–	7,296 99
Victoria, B.C.	–	–	–	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.					
Regina, Sask	–	–	–	–	–
Brantford, Ont.	–	–	–	–	–
Windsor, Ont.	–	–	–	–	–
Verdun, Que.	–	–	–	–	–
Hull, Que.	–	–	–	–	–
Saskatoon, Sask	–	–	–	–	–
Sydney, N.S	–	–	–	–	–
Three Rivers, Que.	–	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.					
Kingston, Ont	–	–	–	–	–
Moosejaw, Sask.	–	–	–	–	–
Sherbrooke, Que.	–	–	–	–	–
Peterborough, Ont	–	–	–	–	–
Sault Ste. Marie, Ont	–	–	–	–	–
Kitchener, Ont.	–	–	–	–	–
Fort William, Ont.	–	–	–	–	–
St. Catharines, Ont.	2,071 37	–	–	–	2,071 37
St. Thomas, Ont	1,079 03	–	–	–	1,079 03
Westmount, Que.	–	–	–	–	–
Moncton, N.B.	–	–	–	–	–
Stratford, Ont.	–	–	–	–	–
Guelph, Ont.	–	–	–	–	–
Lachine, Que	–	–	–	–	–
New Westminster, B.C.	–	–	–	–	–
Port Arthur, Ont	–	–	–	–	–
Sarnia, Ont.	1,106 82	–	–	–	1,106 82
Brandon, Man	–	–	–	–	–
Ningara Falls, Ont.	–	–	–	–	–
Outremont, Que	–	–	–	–	–
Galt, Ont.	–	–	–	–	–
Belleville, Ont.	–	–	–	–	–
St. Boniface, Man.	–	–	–	–	–
Charlottetown, P.E.I.	–	–	–	–	–
Lethbridge, Alta	–	–	–	–	–
New Glasgow, N.S.	–	–	–	–	–
Owen Sound, Ont.	516 34	–	–	–	516 34
Amherst, N.S.	–	–	–	–	–
Medicine Hat, Alta.	–	–	–	–	–
St. Hyacinthe, Que.	–	–	–	–	–
Woodstock, Ont.	1,085 31	–	–	–	1,085 31
Levis, Que.	–	–	–	–	–

[1] Including City grant.

TABLE 5.—RECEIPTS—*Continued.*

Donations and Gifts for Pension or Benefit Funds.						
For Teachers.	For Fire Brigade.	For Police.	For Charities and Institutions.	For Play Grounds and Recreation.	For All Other.	Total Donations and Gifts for Pension or Benefit Funds.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.						
–	–	–	227,629 54	–	355 00	227,984 54
–	[1] 28,079 50	[1] 10,633 40	–	–	–	38,712 90
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	102,144 00	–	–	102,144 00
GROUP II—Cities having a Population of 50,000 to 100,000.						
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	225 00	–	–	–	–	225 00
–	–	–	–	–	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.						
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.						
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	251 92	190 40	–	442 32
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	1,000 00	1,000 00
–	[2] –	1,000	–	–	–	1,000 00
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
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–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	358 38	–	–	358 38
–	–	–	–	–	–	–

[2] Included in Police.

TABLE 5.—RECEIPTS—*Continued.*

Name of City or Town	Libraries, Museums and Art Galleries	Sanitation and	
		Street cleaning, sprinkling and snow clearing	Sewers and sewage disposal
	$ cts.	$ cts	$ cts.
GROUP I—Cities having a Population of over 100,000			
Montreal, Que	432 50	42,323 54	2,138 00
Toronto, Ont	–	8,029 16	48 80
Winnipeg, Man	1,200 00	–	–
Vancouver, B.C	–	–	–
Quebec, Que	–	–	–
Hamilton, Ont	–	–	–
Ottawa, Ont	26,880 00	48,981 41	–
GROUP II—Cities having a Population of 50,000 to 100,000.			
Calgary, Alta	–	–	–
Edmonton, Alta	[1] –	–	–
Halifax, N.S	–	–	–
St. John, N.B	–	–	1,147 02
London, Ont	1,882 60	46,703 73	3,319 10
Victoria, B.C	2,850 45	1,017 40	35,918 63
GROUP III—Cities having a Population of 25,000 to 50,000.			
Regina, Sask	584 29	–	–
Brantford, Ont	[4] –	[3] –	[3] –
Windsor, Ont	–	–	–
Verdun, Que	–	8,773 30	8,610 61
Hull, Que	–	2,950 50	–
Saskatoon, Sask	680 89	–	–
Sydney, N.S	–	–	–
Three Rivers, Que	–	44,875 86	23,590 82
GROUP IV—Cities having a Population of 10,000 to 25,000.			
Kingston, Ont	–	–	–
Moosejaw, Sask	10,730 82	–	–
Sherbrooke, Que	–	–	–
Peterborough, Ont	–	–	1,066 01
Sault Ste. Marie, Ont	–	–	300 00
Kitchener, Ont	450 00	–	–
Fort William, Ont	–	–	–
St. Catharines, Ont	6,792 18	[3] –	[3] –
St. Thomas, Ont	–	96 84	–
Westmount, Que	437 23	11,430 68	–
Moncton, N.B	–	–	–
Stratford, Ont	–	–	–
Guelph, Ont	–	–	–
Lachine, Que	–	–	–
New Westminster, B.C	39 74	–	–
Port Arthur, Ont	[5] –	–	–
Sarnia, Ont	–	–	–
Brandon, Man	–	–	–
Niagara Falls, Ont	–	–	–
Outremont, Que	–	[3] –	[3] –
Galt, Ont	–	[3] –	[3] –
Belleville, Ont	–	–	–
St. Boniface, Man	–	–	–
Charlottetown, P.E.I	–	15,401 44	–
Lethbridge, Alta	479 18	–	–
New Glasgow, N.S	–	–	–
Owen Sound, Ont	3,133 61	110 00	999 40
Amherst, N.S	–	–	–
Medicine Hat, Alta	–	–	2,302 33
St. Hyacinthe, Que	–	–	–
Woodstock, Ont	563 77	[3] –	[3] –
Levis, Que	–	–	–

[1] Including Public Baths. [2] Including Fees from Cemeteries. [3] Included in Levy for Current Year.
[4] Included in Education. [5] Earnings.

TABLE 5.—RECEIPTS—*Continued.*

Promotion of Cleanliness			Fees from Hospitals	Fees from other Institutions	Non-revenue Receipts	
Garbage or refuse collection and disposal	Other Sanitation	Total Sanitation and Promotion of Cleanliness			Sinking Funds	Refunds correcting erroneous payments
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.						
42 00	787 95	45,291 49	–	–	909,565 22	753 00
3,102 94	–	11,180 90	19,755 74	–	4,933,334 54	–
–	[1] 10,100 00	10,100 00	38,000 00	[2] 26,710 00	–	–
23,066 03	–	23,066 03	–	–	–	–
–	–	–	–	–	–	–
–	–	–	159,017 00	8,944 00	383,511 00	–
128 21	–	49,109 62	8,189 20	–	208,979 98	–
GROUP II—Cities having a Population of 50,000 to 100,000.						
–	–	–	–	–	–	–
8,471 36	3,172 45	11,643 81	106,366 58	–	–	–
–	–	–	–	–	–	–
–	–	1,147 02	–	–	107,183 81	–
60,399 14	465 15	110,887 12	103,515 82	–	488,898 00	–
7,037 03	–	43,973 06	4,460 59	130 48	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.						
8,565 00	1,162 95	9,727 95	175,931 64	–	340,016 47	–
[3] –	[3] –	[3] –	45,420 00	–	20,376 00	–
–	–	–	–	–	9,341 00	–
–	–	17,383 91	–	–	6,814 27	–
–	–	2,950 50	–	–	–	–
272 00	5,547 00	5,819 00	105,056 75	–	[5] 21,957 11	–
–	–	–	41,822 42	–	–	–
–	–	68,466 68	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.						
–	–	–	–	–	–	–
12,370 65	–	12,370 65	42,786 92	–	–	–
–	–	–	–	–	57,000 00	–
–	–	1,066 01	606 60	–	17,427 22	148 60
612 00	55 50	967 50	–	–	17,562 54	–
–	–	–	–	–	–	–
–	–	–	759 93	–	–	–
[3] –	[3] –	[3] –	274 00	41 00	–	–
169 60	–	266 44	365 09	–	–	–
799 01	2,108 00	14,337 69	–	–	69,261 65	–
–	–	–	–	–	–	–
–	–	–	–	–	139,595 02	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
2,199 99	377 50	2,577 49	–	–	[3] –	–
1,777 97	–	[4] 1,777 97	[6] –	–	[5] 672 85	–
–	–	–	–	–	123 06	–
–	–	–	2,736 00	1,730 46	3,871 05	20 00
–	–	–	–	–	–	12,982 34
[3] –	[3] –	[3] –	–	–	–	–
[3] –	[3] –	[3] –	–	–	–	–
–	–	–	–	–	174,154 67	–
–	–	–	–	–	–	–
–	–	15,401 44	–	–	–	–
72 00	–	72 00	–	–	–	–
–	–	–	–	–	6,753 00	–
–	–	1,109 40	–	–	208,203 59	948 44
–	–	–	–	–	35,350 66	–
12,509 56	1,329 90	16,141 79	797 00	–	–	–
–	–	–	–	–	–	–
[3] –	[3] –	[3] –	–	–	17,072 76	–
–	–	–	–	–	–	–

[6] Included in Other Property Tax.

TABLE 5.—RECEIPTS.—*Continued.*

Name of City or Town	Non-revenue Receipts.			Miscellaneous Receipts
	Interest	Other not specified	Total Non-revenue Receipts	
	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.				
Montreal, Que	–	2,856,535 58	3,766,853 70	–
Toronto, Ont	176,373 16	2,675,908 97	7,845,616 97	287,619 88
Winnipeg, Man	–	–	–	44,300 00
Vancouver, B.C	–	–	–	8,639 32
Quebec, Que	–	–	–	–
Hamilton, Ont	–	61,815 00	445,326 00	–
Ottawa, Ont	472,331 13	–	681,311 11	–
GROUP II—Cities having a Population of 50,000 to 100,000.				
Calgary, Alta	–	–	–	56,336 97
Edmonton, Alta	–	–	–	–
Halifax, N.S	–	–	–	–
St. John, N.B	–	–	107,183 81	45,846 80
London, Ont	75,623 60	5,237 12	569,758 72	–
Victoria, B.C	64,655 18	–	64,655 18	14,018 44
GROUP III—Cities having a Population of 25,000 to 50,000.				
Regina, Sask	26,054 06	36,891 41	402,961 94	–
Brantford, Ont	42,700 00	–	63,166 00	–
Windsor, Ont	2,075 98	8,294 63	19,711 61	–
Verdun, Que	4,438 43	5,669 30	16,922 00	–
Hull, Que	5,510 44	2,399 67	7,910 11	323 55
Saskatoon, Sask	–	33,225 25	60,182 36	–
Sydney, N.S	3,791 14	–	3,791 14	–
Three Rivers, Que	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.				
Kingston, Ont	12,099 42	–	12,099 42	–
Moosejaw, Sask	–	–	–	–
Sherbrooke, Que	2,534 35	13,099 62	72,633 97	–
Peterborough, Ont	37,972 00	225,683 94	281,231 76	666 96
Sault Ste. Marie, Ont	8,857 84	–	26,420 38	–
Kitchener, Ont	–	–	–	–
Fort William, Ont	1,668 34 [10]	38,853 22	40,521 56 [11]	124,463 10
St. Catharines, Ont	–	–	–	–
St. Thomas, Ont	3,415 86	1,123 71	4,539 57	287 65
Westmount, Que	7,771 65	–	77,033 30	–
Moncton, N.B	–	–	–	–
Stratford, Ont	–	686,691 89	826,286 91	–
Guelph, Ont	–	–	–	–
Lachine, Que	2,723 76	11,637 72	14,361 48	–
New Westminster, B.C	–	10,652 88	10,652 88	–
Port Arthur, Ont	–	–	672 85	3,659 88
Sarnia, Ont	5,406 38	–	5,529 14	–
Brandon, Man	7,040 00	–	10,931 05	–
Niagara Falls, Ont	154 26	5,311 78	18,448 38	–
Outremont, Que	–	–	–	45,444 22
Galt, Ont	–	–	–	–
Belleville, Ont	21,357 51 [16]	135,000 00	330,512 18	–
St. Boniface, Man	–	–	–	3,105 39
Charlottetown, P.E.I	–	–	–	–
Lethbridge, Alta	–	–	–	159 20
New Glasgow, N.S	–	6,809 63	13,592 63	–
Owen Sound, Ont	30,897 66	6,833 51	246,883 20	–
Amherst, N.S	–	–	35,350 66	10,258 78
Medicine Hat, Alta	–	–	–	–
St. Hyacinthe, Que	3,516 45	4,328 66	7,845 11	–
Woodstock, Ont	4,569 69	1,438 38	25,927 97 [17]	12,315 08
Levis, Que	362 17	3,482 55	3,844 72	–

[1] Including Exchange. [2] Including Bank Overdraft. [3] Accrued. [4] Included in Levy for Current Year. [5] Sold. [6] Including Hypothecation of Debentures. [7] Including Loans Transferred, Victory Relief Act and Capital Sum Commuted. [8] Including Proceeds and Notes for Waterworks. [9] Premium. [10] Including Trust Act.

TABLE 5.—RECEIPTS.—*Concluded.*

Total Ordinary Receipts	Extraordinary Receipts					Grand Total Ordinary and Extraordinary Receipts
	General Debentures or Bonds	Special Debentures or Bonds	Interest	Other Extraordinary Receipts	Total Extraordinary Receipts	
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000-						
20,618,253 00	16,582,388 10	16,625,769 73	291,147 11	264,339 16	33,763,644 10	54,381,897 10
38,433,669 03	3,298,410 88	–	[2] 169,429 39	–	3,467,840 27	41,901,509 30
8,151,777 23	–	–	–	–	–	8,151,777 23
4,959,836 57	–	–	–	–	–	4,959,836 57
1,908,656 61	2,888,080 56	–	–	–	2,888,080 56	4,796,737 17
5,037,828 76	875,630 00	26,513 00	127,733 00	[3] 1,244,448 00	2,274,324 00	7,312,152 76
5,771,192 04	230,934 90	596,858 90	[3] 16,679 88	850,473 68	1,694,947 36	7,466,139 40
GROUP II—Cities having a Population of 50,000 to 100,000.						
5,711,241 90	–	–	–	–	–	5,711,241 90
6,102,772 72	[4] 1,339,890 00	32,245 31	[3] 11,597 60	–	1,383,732 91	7,486,505 63
921,553 53	–	–	–	–	–	921,553 53
1,639,762 55	617,000 00	–	–	–	617,000 00	2,256,762 55
2,591,932 35	351,016 48	188,456 78	–	32,601 54	[6] 757,485 96	3,349,418 31
1,839,281 55	–	–	9,771 71	[7] 187,827 90	197,599 61	2,036,881 16
GROUP III—Cities having a Population of 25,000 to 50,000.						
4,250,862 70	72,266 00	5,000 00	11,919 36	13,291 18	102,476 54	4,353,339 24
1,261,139 00	493,600 00	352,655 00	–	70,493 00	916,748 00	2,177,887 00
1,192,523 70	293,712 29	–	1,364 33	–	295,076 62	1,487,600 32
440,331 42	225,000 00	24,500 00	6,187 50	–	255,687 50	696,018 92
284,200 58	13,400 00	25,432 34	1,595 00	[8] 51,250 00	91,677 34	375,877 92
2,485,766 42	343,814 61	–	[3] 3,041 17	–	346,855 78	2,832,622 20
635,425 66	–	–	–	–	–	635,425 66
470,646 70	421,000 00	–	–	115,025 66	536,025 66	1,006,672 36
GROUP IV—Cities having a Population of 10,000 to 25,000.						
467,673 18	112,000 00	–	–	–	112,000 00	579,673 18
1,349,777 27	[4] –	[4] –	[4] –	[4] –	[4] –	1,349,777 27
937,158 32	216,000 00	–	–	–	216,000 00	1,153,158 32
1,113,038 84	31,508 18	–	[3] 47 53	[9] 1,231 93	32,787 64	1,145,826 48
983,091 43	217,197 72	17,868 58	1,292 84	25,981 90	262,341 04	1,245,432 47
528,226 59	–	2,545 78	102 90	–	2,648 68	530,875 27
1,654,982 33	1,070,000 00	72,886 99	–	58,641 95	1,201,528 94	2,856,511 27
–	–	–	–	–	–	–
724,201 42	72,999 96	–	–	[12] 265,000 00	337,999 96	1,062,201 38
1,018,964 53	–	–	–	–	–	1,018,964 53
–	–	–	–	–	–	–
1,280,060 48	32,500 00	–	1,538 27	9,845 00	43,883 27	1,323,943 75
396,329 07	–	–	–	–	–	396,329 07
357,185 53	–	–	–	[19] 148,739 12	148,739 12	535,924 65
808,197 02	–	–	2,742 73	–	2,742 73	810,939 75
755,081 99	–	–	–	–	–	755,081 99
631,586 74	196,900 00	–	[11] 12,806 62	59,634 94	269,341 56	900,928 30
951,256 88	–	6,366 37	–	–	6,366 37	957,623 25
534,237 14	67,862 12	–	[14] 1,755 56	–	69,617 68	603,854 82
340,510 25	–	–	–	[15] 196,030 00	196,030 00	536,540 25
563,272 68	–	–	–	–	–	563,272 68
774,699 08	70,865 27	79,852 05	7,048 23	1,074 74	158,940 29	933,640 37
744,970 06	–	–	–	–	–	744,970 06
157,694 44	126,000 00	–	4,100 00	–	130,100 00	287,794 44
877,004 65	–	–	–	–	–	877,004 65
198,823 47	–	40,920 73	–	9,674 93	50,595 66	249,419 13
863,671 07	3,000 00	–	–	–	3,000 00	866,671 07
244,105 55	–	17,500 00	11,176 50	–	28,676 50	272,782 05
797,063 14	–	–	–	–	–	797,063 14
187,571 00	60,000 00	98,380 00	–	–	158,380 00	345,951 00
345,451 89	64,586 37	1,447 75	–	[18] 16,969 20	83,003 32	428,455 21
129,413 98	–	–	–	28,800 00	28,800 00	158,213 98

[11] Railway Fire Insurance Damage. [12] Bills Payable. [13] Accrued Interest and Premium on Debentures. [14] Including Premium on Debentures Sold. [15] Sale of Temporary Investments in Govt. Securities. [16] Bank Loans. [17] Cash on hand January 1, 1920. [18] Housing Scheme. [19] Temporary loans.

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TABLE 6.—EXPENDITURE.

Name of City or Town	General Government.			
	Mayor and Council, including salaries and allowances	All other civic officials and employees, including salaries and allowances	Buildings, construction, maintenance, repairs and insurance	Elections
	$ cts	$ cts	$ cts	$ cts.
GROUP I—Cities having a Population of over 100,000.				
Montreal, Que	84,571 22	1,882,210 12	209,817 48	37,559 49
Toronto, Ont	37,887 83	419,525 09	921,675 90	20,804 18
Winnipeg, Man	26,620 00	196,106 66	27,820 00	4,950 00
Vancouver, B.C	14,600 00	182,537 89	2,707 64	2,203 88
Quebec, Que	3,000 00	93,523 30	–	–
Hamilton, Ont	12,810 00	110,511 00	21,326 00	2,965 00
Ottawa, Ont	14,875 00	86,729 65	482,305 07	4,980 72
GROUP II—Cities having a Population of 50,000 to 100,000.				
Calgary, Alta	9,988 95	106,907 60	40,298 40	2,954 75
Edmonton, Alta	[7] 4,200 00	[7] 142,553 65	[7] 192,650 53	[7] 4,000 00
Halifax, N.S	[3] –	46,078 76	5,314 59	2,707 35
St. John, N.B	2,000 00	56,575 81	30,971 35	2,432 19
London, Ont	7,000 00	37,504 10	1,526 33	–
Victoria, B.C	–	–	–	–
GROUP III—Cities having a Population of 25,000 to 50,000.				
Regina, Sask	5,333 00	104,025 32	10,849 98	665 77
Brantford, Ont	1,500 00	22,677 00	6,858 00	1,269 00
Windsor, Ont	600 00	23,363 29	110,923 66	703 30
Verdun, Que	5,000 00	12,743 40	4,272 45	6,219 48
Hull, Que	–	25,534 47	3,153 21	274 35
Saskatoon, Sask	4,915 83	62,964 20	9,078 69	534 70
Sydney, N.S	1,500 00	15,000 00	5,000 00	500 00
Three Rivers, Que	500 00	20,014 99	–	710 46
GROUP IV—Cities having a Population of 10,000 to 25,000.				
Kingston, Ont	[8] 800 00	16,383 00	8,317 00	463 50
Moosejaw, Sask	4,499 85	43,668 59	7,705 63	971 20
Sherbrooke, Que	–	19,856 46	795 98	269 85
Peterborough, Ont	1,000 00	19,379 83	57,866 26	685 13
Sault Ste. Marie, Ont	1,700 00	21,446 40	3,762 41	517 00
Kitebener, Ont	1,000 00	12,840 48	1,131 31	481 82
Fort William, Ont	2,000 00	20,993 47	12,821 03	342 00
St. Catharines, Ont	1,000 00	29,577 30	–	729 49
St. Thomas, Ont	500 00	13,419 00	13,163 44	669 81
Westmount, Que	–	74,563 61	12,699 25	1,161 91
Moncton, N.B	–	–	–	–
Stratford, Ont	500 00	7,187 00	4,615 00	236 00
Guelph, Ont	12,212 23	–	–	427 20
Lachine, Que	4,199 40	16,255 19	26,935 28	853 25
New Westminster, B.C	4,800 00	24,239 85	27,357 61	1,219 95
Port Arthur, Ont	–	21,005 07	3,533 14	1,259 79
Sarnia, Ont	–	13,008 22	4,382 07	418 95
Brandon, Man	2,624 50	21,195 28	7,283 71	1,375 35
Niagara Falls, Ont	1,100 00	13,891 12	–	159 21
Outremont, Que	–	34,646 44	2,476 54	–
Galt, Ont	600 00	10,467 53	1,000 00	214 00
Belleville, Ont	6,444 79	10,058 68	2,236 91	310 68
St. Boniface, Man	3,532 00	20,344 37	5,077 34	462 48
Charlottetown, P.E.I	324 44	2,878 02	–	–
Lethbridge, Alta	[6] –	19,259 00	–	2,085 53
New Glasgow, N.S	–	3,164 00	–	28 21
Owen Sound, Ont	500 00	10,596 91	5,007 78	256 11
Amherst, N.S	–	11,076 95	1,784 99	62 00
Medicine Hat, Alta	5,100 00	79,335 96	48,892 00	525 00
St. Hyacinthe, Que	–	6,575 78	–	41 25
Woodstock, Ont	[6] –	9,280 04	5,501 29	310 00
Levis, Que	–	4,989 76	1,659 79	–

[1] Included in Public Schools. [2] Including Sinking Funds and Interest. [3] Salaries of Mayor and Commissioners are charged out against the different departments of the city's business they manage. [4] Included in Collegiate and

TABLE 6.—EXPENDITURE—*Continued.*

General Government.		Education.						
Other expenditure for General Government	Total General Government	Public Schools	Separate Schools	Collegiate and High Schools	Technical Schools	Libraries, Museums and Art Galleries	Other Educational Expenditure.	Total Education
$ cts	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts.	$ cts	$ cts.
GROUP I—Cities having a Population of over 100,000.								
–	2,214,158 31	1,287,472 84	2,677,565 05	–	52,500 00	6,153 12	–	4,023,691 01
256,809 36	1,656,802 36	4,356,441 60	[1] –	[1] –	[1] –	204,254 62	–	4,560,696 22
55,616 64	311,113 30	1,521,000 00	–	–	–	62,981 36	–	1,583,981 36
33,263 82	235,313 23	[2]1,230,245 52	[1] –	[1] –	[1] –	30,000 00	–	1,260,245 52
–	96,523 30	–	–	–	20,000 00	–	–	20,000 00
202,155 00	349,767 00	1,079,756 90	57,378 00	89,622 40	224,791 51	41,000 00	–	1,483,548 81
89,068 59	677,959 03	554,115 00	182,365 14	123,970 00	31,934 00	26,880 00	–	919,264 14
GROUP II—Cities having a Population of 50,000 to 100,000.								
204,331 45	364,481 15	723,152 89	73,475 57	–	–	20,200 00	–	816,828 46
–	343,404 18	577,600 01	90,000 00	141,866 66	40,533 33	30,748 44	144,572 02	1,025,320 46
[7] –	42,620 00	385,776 89	–	–	2,500 00	4,300 00	9,300 00	401,876 89
11,027 98	65,128 68	262,857 05	[1] –	[1] –	–	6,683 82	–	269,540 87
51,693 84	143,673 22	361,440 14	27,447 66	89,439 64	58,304 34	20,394 53	47,652 81	604,679 12
13,658 66	59,689 09	339,160 07	[1] –	[1] –	[1] –	19,983 37	–	359,143 44
GROUP III—Cities having a Population of 25,000 to 50,000.								
125,270 69	246,144 76	313,264 60	45,426 33	64,161 35	–	22,391 23	–	445,243 51
–	32,304 00	121,264 00	9,476 00	43,783 00	8,760 00	–	–	183,283 00
12,183 10	147,773 35	248,222 29	–	59,914 03	21,696 98	–	–	299,833 30
15,386 84	43,622 17	–	–	–	–	–	–	–
1,565 99	30,528 02	–	–	–	–	–	–	–
22,855 16	100,348 68	386,830 74	31,363 48	76,329 90	–	8,179 95	700 00	503,404 07
1,000 00	23,000 00	112,681 33	–	[1] –	1,000 00	–	–	113,681 33
594 87	21,820 32	–	–	–	–	–	–	–
GROUP IV—Cities having a Population of 10,000 to 25,000.								
41,025 15	66,988 65	83,729 11	15,414 14	29,515 60	–	3,000 00	–	131,658 85
–	56,845 27	328 077 74	13,268 57	46,735 85	–	10,872 37	–	398,954 53
6,869 30	27,791 59	–	–	–	80 00	1,500 00	150 00	1,730 00
59,416 32	138,347 54	95,017 68	14,157 00	29,500 00	–	6,000 00	–	144,674 68
48,511 51	75,937 32	133,880 23	35,456 72	17,000 00	–	7,000 00	–	193,336 95
4,439 77	19,893 38	108,806 62	16,927 72	35,222 06	[4] –	6,682 00	–	167,608 39
51,556 11	87,712 61	139,000 00	21,855 28	–	–	16,481 05	278,500 00	455,836 33
–	–	134,156 26	12,525 82	40,732 33	–	6,862 09	1,860 00	196,136 50
15,232 19	42,984 44	102,000 00	5,239 47	[1] –	–	4,075 00	[1] –	111,314 47
–	88,424 77	–	–	–	–	3,541 79	–	3,541 79
–	6,357 01	–	–	–	–	–	–	86,795 60
30,773 18	43,311 18	66,000 00	7,601 07	23,500 00	–	3,000 00	–	100,101 07
–	12,639 43	64,478 13	9,501 71	26,890 88	–	5,999 82	–	106,870 54
6,922 83	55,165 95	–	–	–	–	–	–	–
–	57,617 41	127,137 27	–	–	–	3,736 30	–	130,873 57
28,893 80	54,711 80	65,402 02	8,143 00	18,923 78	–	8,527 47	–	100,996 27
–	17,509 24	52,742 75	5,850 09	27,888 23	1,658 56	4,500 00	360 00	92,999 63
891 59	33,370 43	220,282 09	[5] –	19,945 13	–	381 42	23,487 71	[5] 273,311 24
–	15,153 33	52,500 00	4,449 00	23,740 79	–	4,700 00	–	85,389 79
679 45	37,802 43	–	–	–	–	–	–	–
28,935 00	41,216 53	60,000 00	2,145 17	12,000 00	–	4,260 00	–	78,405 17
57,340 47	76,391 53	41,069 00	5,000 00	25,468 00	–	3,300 00	18,394 47	93,231 47
7,002 87	36,419 06	–	–	–	–	–	–	–
–	3,202 46	27,606 01	–	–	–	–	–	27,606 01
79,118 05	100,462 58	106,000 00	12,845 00	–	–	2,082 07	–	120,927 07
546 48	3,738 69	38,901 77	–	–	1,075 21	428 55	–	40,405 53
323,924 00	340,284 80	66,733 00	2,947 42	25,518 07	8,274 50	5,012 00	3,423 19	111,908 18
–	12,922 94	35,850 79	–	–	–	–	–	35,850 79
7,850 00	141,812 96	182,031 07	6,028 96	–	–	3,625 00	–	191,685 03
–	6,617 03	–	–	–	221 87	–	–	221 87
4,274 92	19,366 25	38,408 55	1,775 00	30,386 26	–	3,646 36	–	74,216 17
777 23	7,426 78	–	–	–	–	–	–	–

[5] Including Sinking Fund payments. [6] Included in all other civic officials, etc.
[7] Not separated see total General Government.

TABLE 6. EXPENDITURE—*Continued.*

Name of City or Town	Health and Sanitation.		
	Street cleaning sprinkling and snow removal	Sewers, including construction, repairs and cleaning	Garbage and refuse system
	$ cts	$ cts	$ cts
GROUP I—Cities having a Population of over 100,000.			
Montreal, Que	721,656 80	215,982 83	116,343 14
Toronto, Ont	1,216,892 59	164,473 05	–
Winnipeg, Man	129,500 00	55,173 80	129,503 35
Vancouver, B.C	76,960 76	45,283 32	98,508 22
Quebec, Que	–	–	–
Hamilton, Ont	48,592 00	232,110 00	47,281 00
Ottawa, Ont	125,345 00	129,000 00	88,260 00
GROUP II—Cities having a Population of 50,000 to 100,000.			
Calgary, Alta	70,810 76	17,282 94	80,168 36
Edmonton, Alta	38,081 49	32,576 37	49,995 77
Halifax, N.S	48,800 00	50,285 99 [1]	–
St. John, N.B	–	22,060 77	–
London, Ont	56,083 77	95,573 98	56,266 70
Victoria, B.C	38,932 86	26,772 95	61,531 60
GROUP III—Cities having a Population of 25,000 to 50,000.			
Regina, Sask	24,196 32	24,876 55	50,255 59
Brantford, Ont	19,623 00	15,313 00	33,589 00
Windsor, Ont	[2] –	77,229 35 [2]	–
Verdun, Que	25,288 38	7,189 49	10,223 74
Hull, Que	7,862 45	2,245 53	–
Saskatoon, Sask	22,300 59	6,425 77	32,961 47
Sydney, N.S	2,133 00	61,330 00	–
Three Rivers, Que	33,768 61	19,890 26	–
GROUP IV—Cities having a Population of 10,000 to 25,000.			
Kingston, Ont	15,965 00	8,308 00	16,282 52
Moosejaw, Sask	12,466 15	16,839 31	32,672 43
Sherbrooke, Que	44,489 03	36,384 01	3,360 00
Peterborough, Ont	14,210 66	16,519 23	12,302 92
Sault Ste. Marie, Ont	9,674 02	56,398 82	14,511 04
Kitchener, Ont	8,215 13	22,516 26	12,596 25
Fort William, Ont	33,058 67	–	96,709 60
St. Catharines, Ont	16,147 07	276 09	22,906 60
St. Thomas, Ont	10,437 53	1,370 70	9,422 26
Westmount, Que	41,677 75	5,024 03	38,559 71
Moncton, N.B	–	–	–
Stratford, Ont	9,307 02	14,217 55	12,633 17
Guelph, Ont	8,575 52	–	10,436 25
Lachine, Que	47,267 96	7,393 88	5,037 17
New Westminster, B.C	1,500 00	250 00	10,311 50
Port Arthur, Ont	14,537 88	3,579 72	10,295 47
Sarnia, Ont	10,978 73	68,200 00	5,968 64
Brandon, Man	6,887 50	1,540 83	18,379 55
Niagara Falls, Ont	4,303 60	1,089 91	8,415 10
Outremont, Que	36,487 61	1,344 00	15,038 00
Galt, Ont	9,170 83	25,176 67	4,945 25
Belleville, Ont	3,015 42	49,858 17	5,428 82
St. Boniface, Man	–	6,638 58	5,569 55
Charlottetown, P.E.I	15,401 44	–	–
Lethbridge, Alta	–	2,189 39	11,626 73
New Glasgow, N.S	2,000 00	9,586 99	–
Owen Sound, Ont	3,960 98	–	4,967 25
Amherst, N.S	–	370 55	–
Medicine Hat, Alta	6,600 00	5,630 70	10,955 59
St. Hyacinthe, Que	9,258 19	5,801 13	447 90
Woodstock, Ont	4,404 67	8,653 35	6,819 55
Levis, Que	737 10	250 00	–

[1] Including expenses in connection with Board of Works. [2] Included in Sewers, etc. [3] Less fixed charges.

TABLE 6.—EXPENDITURE—*Continued.*

Health and Sanitation		Charities and Corrections				
Other expenditure for Health and Sanitation	Total Health and Sanitation	Poor Relief outdoors	Hospitals.	Jails	Other Charities, etc.	Total Charities and Corrections
$ cts.	$ cts.	$ cts	$ cts	$ cts	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.						
69,349 73	1,123,332 50	22,756 07	488,375 80	45,097 82	223,110 72	779,340 41
600,179 85	2,281,545 49	137,929 64	577,223 59	41,479 15	216,980 88	973,613 26
174,986 60	489,163 75	132,160 00	438,336 84	–	28,200 00	598,695 84
[1] 82,030 30	302,782 60	52,185 83	157,181 20	19,382 51	47,620 37	276,369 91
42,481 83	42,481 83	–	–	–	–	–
31,376 00	359,389 00	78,546 00	340,571 00	29,313 00	306,646 00	749,076 00
94,605 00	437,210 00	11,664 50	176,671 23	19,500 00	52,059 00	259,894 73
GROUP II—Cities having a Population of 50,000 to 100,000.						
31,245 01	199,507 07	40,915 53	217,191 40	–	26,382 85	284,489 78
21,551 49	142,295 12	10,500 00	173,958 79	–	22,521 00	206,979 79
16,572 00	115,657 99	–	6,500 00	–	96,553 70	103,053 70
9,939 00	31,999 77	–	92,144 84	–	36,934 42	129,079 26
14,128 84	223,353 29	1,417 30	229,542 36	–	18,589 30	249,548 96
44,822 75	172,060 17	–	–	–	14,427 78	14,427 78
GROUP III—Cities having a Population of 25,000 to 50,000.						
23,906 85	123,235 31	4,086 66	225,119 64	–	4,713 25	233,919 55
9,852 00	78,377 00	4,234 00	80,420 00	–	16,367 00	101,021 00
10,383 38	87,612 73	–	11,583 90	5,720 24	–	17,304 14
6,383 63	49,085 24	12,205 77	2,036 38	3,791 82	117 25	18,151 22
–	10,107 98	–	5,923 94	1,773 28	1,675 00	9,372 22
40,515 77	102,203 60	[3] 1,808 62	[3] 100,156 60	–	–	101,965 22
1,500 00	65,163 00	5,000 00	–	–	–	5,000 00
7,137 95	62,796 82	–	2,050 00	372 89	–	2,422 89
GROUP IV—Cities having a Population of 10,000 to 25,000.						
2,913 81	43,469 33	600 00	20,000 00	4,702 39	4,174 18	29,476 57
10,106 34	72,084 23	7,179 40	41,808 60	–	2,031 86	51,019 86
9,840 90	94,073 94	6,360 84	2,500 00	223 20	9,374 14	18,458 18
4,643 26	47,676 07	7,849 01	9,062 82	7,031 13	–	23,942 96
3,895 33	84,479 21	[4] 4,668 02	[4] 515 00	[4] 10,738 39	[4] 1,926 27	17,847 68
4,712 35	48,039 99	[4] –	[4] –	[4] –	[4] –	1,925 95
21,531 25	151,299 52	15,758 29	14,200 00	–	17,500 00	47,458 29
–	39,329 76	–	–	–	–	–
3,297 41	24,527 90	4,348 59	13,276 55	–	–	17,625 14
698 31	85,959 80	–	1,700 00	–	–	1,700 00
–	–	–	–	–	–	4,762 00
4,112 51	40,270 25	3,410 16	–	–	1,711 43	5,121 59
2,670 26	21,682 03	2,280 23	6,983 40	7,395 17	6,468 51	23,127 31
9,186 58	68,885 59	2,714 00	2,400 00	2,254 16	–	7,368 16
5,585 94	17,647 44	5,070 00	4,695 25	–	2,813 00	12,578 25
7,099 07	35,512 14	2,200 64	13,517 98	–	4,190 24	19,908 86
2,352 52	87,499 89	653 22	4,025 00	6,249 55	1,464 00	12,391 77
9,465 25	36,473 19	4,159 21	9,115 35	–	1,244 55	14,519 11
2,272 87	16,084 48	1,147 82	2,643 75	93 45	3,320 95	7,205 97
521 39	53,391 00	244 45	150 00	–	869 82	1,264 27
1,947 25	41,240 00	2,410 80	5,000 00	–	–	7,410 80
2,102 54	60,404 95	1,200 00	1,468 42	–	–	2,668 42
797 62	13,005 75	–	5,359 50	–	5,278 88	10,638 38
678 00	16,079 44	450 00	–	–	–	450 00
7,714 04	21,530 16	3,305 62	12,000 00	–	–	15,305 62
3,469 79	15,056 78	3,075 58	750 00	–	–	3,825 58
1,795 46	10,723 69	3,045 66	3,000 00	–	–	6,045 66
2,652 72	3,023 27	6,129 69	300 00	–	–	6,429 69
5,983 20	29,169 49	4,497 00	6,000 00	–	–	10,497 00
–	15,507 22	597 10	900 00	78 16	2,946 16	4,521 42
2,596 92	22,474 49	3,878 76	3,300 00	5,367 74	2,093 29	14,639 79
1,113 05	2,100 15	–	200 00	–	4,770 20	4,970 20

[4] Not separated, see total Charities and Corrections. [3] Included in Street Cleaning, etc.

TABLE 6.—EXPENDITURE—*Continued.*

Name of City or Town	Protection of Life and Property					
	Police Department			Fire Department		
	Salaries and Wages	Equipment.	Total Police Department	Salaries and Wages	Equipment	Total Fire Department
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.						
Montreal, Que.	1,268,662 15	102,868 73	1,371,530 88	895,020 68	179,922 81	1,074,943 49
Toronto, Ont.	971,965 80	203,034 03	1,174,999 83	690,434 30	895,016 81	1,585,451 11
Winnipeg, Man.	[1] 637,390 05	72,201 70	709,591 75	370,154 90	115,804 47	485,959 37
Vancouver, B.C.	319,903 94	69,273 94	389,177 88	275,701 26	70,081 50	345,782 76
Quebec, Que.	–	–	140,350 78	–	–	288,286 52
Hamilton, Ont.	192,150 95	20,536 67	212,687 62	158,766 00	43,735 00	202,521 00
Ottawa, Ont.	115,745 35	35,305 42	151,050 77	163,245 19	46,543 28	209,788 47
GROUP II—Cities having a Population of 50,000 to 100,000.						
Calgary, Alta.	89,745 06	17,173 29	106,919 35	145,375 09	66,877 99	212,253 08
Edmonton, Alta	102,302 55	30,798 43	133,100 98	104,759 97	38,909 99	143,669 96
Halifax, N.S.	106,750 00	10,000 00	116,750 00	127,042 40	31,715 15	158,757 55
St. John, N.B.	61,777 47	20,282 94	82,060 41	66,333 22	29,444 44	95,777 66
London, Ont.	75,876 24	7,032 96	82,909 20	80,196 61	35,188 08	115,384 69
Victoria, B.C.	–	–	95,105 30	–	–	138,577 08
GROUP III—Cities having a Population of 25,000 to 50,000.						
Regina, Sask.	62,023 78	8,788 60	70,812 38	54,163 05	15,830 18	69,993 23
Brantford, Ont.	30,551 00	4,942 00	35,493 00	37,702 00	25,044 00	62,746 00
Windsor, Ont.	50,876 03	6,310 16	57,186 19	43,877 06	9,455 52	53,332 58
Verdun, Que.	20,363 75	4,105 62	24,469 37	20,363 76	4,105 63	24,469 39
Hull, Que.	11,828 16	3,130 02	14,958 18	23,007 49	11,117 49	34,124 98
Saskatoon, Sask	32,639 92	7,784 08	40,424 00	60,071 42	49,363 99	109,435 41
Sydney, N.S.	23,200 00	1,850 00	25,050 00	14,500 00	1,000 00	15,500 00
Three Rivers, Que.	16,416 58	4,084 33	20,500 91	16,989 66	11,854 76	28,844 42
GROUP IV—Cities having a Population of 10,000 to 25,000.						
Kingston, Ont.	15,631 65	900 00	16,531 65	17,422 00	7,439 55	24,861 55
Moosejaw, Sask.	25,581 60	7,007 69	32,589 29	37,327 90	56,494 38	93,822 28
Sherbrooke, Que.	[7] 17,385 10	–	17,385 10	36,018 36	[7] –	36,018 36
Peterborough, Ont.	16,083 61	2,571 05	18,654 66	25,042 30	10,027 10	35,069 40
Sault Ste. Marie, Ont	35,804 26	–	35,804 26	38,337 89	10,844 98	49,182 87
Kitchener, Ont.	9,283 01	1,870 61	11,153 62	18,678 51	4,459 38	23,137 89
Fort William, Ont.	–	–	28,266 52	35,588 55	9,915 61	451,504 16
St. Catharines, Ont.	13,051 14	774 00	13,825 14	22,633 16	8,049 16	30,682 32
St. Thomas, Ont.	12,965 00	745 22	13,710 22	12,264 20	4,511 64	16,775 84
Westmount, Que.	50,233 99	22,423 68	72,657 67	[11] –	[11] –	[11] –
Moncton, N.B.	–	–	20,065 75	–	–	31,427 76
Stratford, Ont.	–	–	14,704 07	–	–	58,057 89
Guelph, Ont.	–	–	13,624 32	–	–	35,585 91
Lachine, Que.	16,644 33	3,781 04	20,425 37	9,224 35	7,478 30	16,702,65
New Westminster, B.C.	17,646 45	5,266 88	22,913 33	37,598 84	5,465 63	43,064 17
Port Arthur, Ont.	17,762 00	6,478 94	24,240 94	28,074 33	22,477 46	50,551 79
Sarnia, Ont.	9,836 03	1,202 15	11,038 20	11,579 35	7,614 92	19,194 27
Brandon, Man.	13,792 60	3,599 04	17,391 64	20,619 33	24,143 95	44,763 28
Niagara Falls, Ont.	15,496 08	1,901 08	17,397 16	10,926 50	14,793 84	25,720 34
Outremont, Que.	21,778 40	9,304 92	31,083 32	[11] –	[11] –	[11] –
Galt, Ont.	5,855 00	308 00	6,163 00	7,340 00	1,500 00	8,840 00
Belleville, Ont.	9,940 90	[7] –	9,940 90	15,305 67	[7] –	15,305 67
St. Boniface, Man.	12,238 53	1,052 50	13,291 03	24,246 57	4,384 63	28,631 00
Charlottetown, P.E.I.			9,489 60	–	–	5,971 00
Lethbridge, Alta.	15,369 80	3,661 82	19,031 62	16,487 30	18,000 37	34,487 67
New Glasgow, N.S.	5,479 06	1,771 44	7,250 50	4,800 00	5,159 96	9,959 96
Owen Sound, Ont.	6,998 30	1,481 98	8,480 28	9,525 32	4,328 35	13,853 67
Amherst, N.S.	3,184 73	838 28	4,023 01	2,976 22	3,432 12	6,408 34
Medicine Hat, Alta	12,603 21	1,800 00	14,403 21	16,081 70	1,700 00	17,781 70
St. Hyacinthe, Que	3,734 75	1,617 65	5,352 40	3,833 17	2,392 67	6,225 84
Woodstock, Ont.	3,691 21	759 24	4,450 45	9,168 05	8,814 26	17,982 31
Levis, Que.	4,339 19	987 63	5,326 82	4,339 19	987 62	5,326 81

[1] Including Special Salaries and Wages during Strike. [2] Including Street Lighting. [3] Housing Commission.
[4] Municipal Buildings and Property only. [5] Less fixed charges. [6] Including Cemeteries and Water Delivery.
[7] Included in Salaries and Wages. [8] Bridges. [9] Included with Waterworks System. [10] Including Telephones.

TABLE 3.—EXPENDITURE—*Continued.*

Municipally Owned Public Services

Waterworks System	Gas System	Electric Light System	Markets and Weigh Scales	Street Railways	Exhibition	Other Public Services	Total Public Services
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.							
1,145,850 71	–	–	9,100 47	–	–	–	1,154,951 18
1,424,902 17	–	650,506 88	267,457 78	791,947 97	53,744 49	639,595 70	3,828,154 99
–	–	120,675 00	15,400 00	–	–	–	136,075 00
169,338 11	–	–	499 05	–	10,000 00	3,142 62	182,979 78
67,671 65	–	97,614 55	13,887 40	–	10,000 00	–	189,173 60
312,472 00	–	–	13,572 00	–	–	327,284 00	653,328 00
265,000 00	–	308,742 89	21,647 50	–	–	–	595,390 39
GROUP II—Cities having a Population of 50,000 to 100,000.							
420,725 06	–	703,011 68	25,683 88	834,413 40	–	187,816 75	2,171,650 77
352,924 58	–	522,392 44	6,762 50	742,388 04	114,042 44	285,406 00	2,023,916 00
–	–	–	–	–	–	–	–
184,202 61	–	–	9,923 84	–	979 38	229,796 99	424,902 82
12,697 43	–	–	11,010 27	–	–	[3] 35,399 61	59,107 31
42,942 32	–	51,003 11	3,410 39	–	–	7,881 29	105,237 11
GROUP III—Cities having a Population of 25,000 to 50,000.							
249,842 38	–	539,059 19	8,617 15	349,696 02	155,701 58	–	1,302,916 32
62,606 00	–	80,372 00	1,200 00	115,370 00	–	–	259,548 00
99,889 88	–	151,361 04	3,281 91	–	–	–	254,532 83
43,781 97	–	45,006 97	–	–	–	–	88,788 94
31,343 78	– [4]	4,703 26	–	–	–	–	36,047 04
[5] 58,009 98	– [5]	280,727 00	[5] 5,005 91	[5] 197,033 68	–	[5 & 6] 26,305 40	567,081 97
16,696 59	–	–	–	–	–	–	16,696 59
105,114 78	–	15,722 12	3,990 89	–	3,071 80	–	127,899 59
GROUP IV—Cities having a Population of 10,000 to 25,000.							
–	–	–	1,278 95	–	–	–	1,278 95
154,142 18	–	284,436 73	2,946 25	–	551 13	–	442,076 29
40,950 77	60,015 62	163,326 31	16,608 34	–	3,800 00	–	284,701 04
83,994 94	–	122,136 76	24 43	–	2,100 00	[8] 167,835 82	376,091 95
272,216 57	– [9]	–	675 48	–	–	–	272,892 05
–	–	–	1,100 00	–	–	–	1,100 00
22,542 85	–	74,839 56	–	174,872 21	–	[10] 57,409 78	359,664 40
58,068 39	19,617 43	89,260 01	3,326 11	–	–	–	170,271 94
55,658 72	146,531 88	98,732 58	96 99	38,882 92	–	23,649 17	363,552 26
–	–	133,599 54	–	–	–	–	133,599 54
74,268 88	–	–	1,844 54	–	–	–	76,113 42
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
34,682 27	–	33,438 86	–	–	–	–	68,121 13
20,024 37	–	36,384 24	3,381 39	–	–	10,894 09	70,684 09
–	–	16,150 23	2,094 37	–	–	–	18,244 60
140,432 02	–	–	1,100 00	–	–	–	141,532 02
106,385 00	–	–	2,281 78	66,218 57	–	6,992 11	181,877 46
53,466 85	–	–	1,816 50	–	–	–	55,283 35
–	–	–	–	–	–	–	–
70,598 77	–	121,306 19	1,732 97	–	–	–	193,637 93
30,540 01	45,000 06	–	–	–	–	–	75,540 07
17,725 19	–	11,017 19	7 55	–	–	3,036 54	31,786 47
15,000 00	–	–	4,729 00	–	500 00	350 00	20,579 00
104,426 60	–	155,532 16	547 25	96,930 81	– [12]	19,726 21	377,163 03
40,799 51	–	–	–	–	–	–	40,799 51
40,850 02	35,595 57	77,257 00	–	–	– [2]	11,555 00	165,257 68
15,360 64	–	–	–	–	–	–	15,360 64
32,133 00	27,035 10	35,134 44	2,576 43	–	–	–	96,878 97
66,741 18	–	–	3,375 12	–	–	–	70,116 30
28,584 06	–	44,659 48	–	–	–	–	73,243 54
70,651 89	–	–	1,116 95	–	–	–	71,768 84

Water Hydrants, Lighting, etc. [11] Included in Police Department. [12] Including Coal Mine.

TABLE 6.—EXPENDITURE—*Continued.*

Name of City or Town	Streets	Sidewalks	Recreations		
			Parks Playgrounds Gardens, Boulevards, etc.	Celebrations and Receptions	Total Recreations
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.					
Montreal, Que	991,149 79	314,450 75	27,190 52	1,085 10	28,275 62
Toronto, Ont	2,574,377 42	[1] –	785,202 76	13,041 24	798,244 00
Winnipeg, Man	69,000 00	42,000 00	143,511 76	1,500 00	145,011 76
Vancouver, B.C	345,179 69	20,184 78	66,950 59	33,173 68	100,124 27
Quebec, Que	172,287 85	[1] –	14,104 53	–	14,104 53
Hamilton, Ont	153,889 00	207,798 00	48,798 00	10,421 00	59,209 00
Ottawa, Ont	486,000 00	27,300 00	19,190 36	3,847 94	23,038 30
GROUP II—Cities having a Population of 50,000 to 100,000.					
Calgary, Alta	90,625 23	[1] –	76,509 01	–	76,509 01
Edmonton, Alta	35,762 13	15,718 21	–	–	–
Halifax, N.S	50,000 00	19,452 95	8,735 00	–	8,735 00
St. John, N.B	[5] 195,967 94	–	12,608 04	2,146 94	14,754 98
London, Ont	210,327 12	15,811 12	22,912 76	11,596 30	31,509 06
Victoria, B.C	80,240 55	[1] –	58,791 82	–	58,791 82
GROUP III—Cities having a Population of 25,000 to 50,000.					
Regina, Sask	44,668 49	6,886 91	16,091 57	8,124 45	24,216 02
Brantford, Ont	82,102 00	[1] –	10,492 00	3,000 00	13,492 00
Windsor, Ont	285,120 64	7,237 11	21,212 09	–	21,212 09
Verdun, Que	33,059 12	37,875 54	3,971 95	–	3,971 95
Hull, Que	5,086 64	749 80	815 50	918 30	1,733 80
Saskatoon, Sask	57,588 46	4,387 86	16,002 88	3,568 84	19,571 72
Sydney, N.S	23,661 90	–	500 00	1,200 00	1,700 00
Three Rivers, Que	8,496 31	2,113 26	2,804 63	776 45	3,581 08
GROUP IV—Cities having a Population of 10,000 to 25,000.					
Kingston, Ont	37,354 84	–	4,569 33	–	4,569 33
Moosejaw, Sask	23,138 19	3,991 57	12,929 34	9,075 53	22,004 87
Sherbrooke, Que	178,655 75	5,245 29	1,896 71	1,468 57	3,365 28
Peterborough, Ont	29,318 58	802 29	1,171 19	–	1,171 19
Sault Ste. Marie, Ont	63,369 29	15,196 16	6,492 49	3,030 81	9,523 30
Kitchener, Ont	11,461 09	[1] –	6,202 00	–	6,202 00
Fort William, Ont	–	–	14,067 04	–	14,067 04
St. Catharines, Ont	168,780 51	[1] –	5,977 41	–	5,977 41
St. Thomas, Ont	133,376 95	406 01	12,908 53	2,942 96	15,851 49
Westmount, Que	26,980 10	2,896 96	23,688 45	3,809 87	27,498 32
Moncton, N.B	75,758 35	12,652 76	4,017 93	–	4,017 93
Stratford, Ont	43,684 59	161 91	3,800 00	842 50	4,642 50
Guelph, Ont	–	–	10,112 05	–	10,112 05
Lachine, Que	–	–	1,954 05	–	1,954 05
New Westminster, B.C	65,894 33	[1] –	6,767 43	588 30	7,355 73
Port Arthur, Ont	19,453 22	–	12,951 33	1,089 65	14,040 98
Sarnia, Ont	[5] 212,339 42	7,760 44	2,800 00	1,700 00	4,500 00
Brandon, Man	22,200 41	103 28	2,661 23	–	2,661 23
Niagara Falls, Ont	43,774 58	[1] –	1,568 49	726 05	2,294 54
Outremont, Que	[5] 27,284 14	1,829 35	4,422 03	203 53	4,625 56
Galt, Ont	7,642 63	8,012 90	4,500 00	500 00	5,000 00
Belleville, Ont	23,176 44	4,080 33	2,897 33	–	2,897 33
St. Boniface, Man	13,514 32	2,080 87	486 75	–	486 75
Charlottetown, P.E.I	15,401 00	[1] –	1,060 00	1,500 00	2,560 00
Lethbridge, Alta	27,035 66	–	18,834 49	–	18,834 49
New Glasgow, N.S	10,668 67	–	–	–	–
Owen Sound, Ont	107,067 17	–	5,210 92	–	5,210 92
Amherst, N.S	7,591 87	[1] –	–	–	–
Medicine Hat, Alta	9,040 00	1,200 00	9,513 80	914 83	10,428 63
St. Hyacinthe, Que	8,236 98	224 89	652 03	825 26	1,477 29
Woodstock, Ont	16,029 64	–	5,992 94	550 00	6,542 94
Levis, Que	18,413 18	–	187 00	–	187 00

[1] Included in Streets. [2] Including Exchange and interest on Funded Debt. [3] Including Prov. Gov't Levy of $563,500. [4] Including Interest Coupons Paid—Gen., $476,644. Local Imp., $81,557. [5] Including Street Lighting.

TABLE 6.—EXPENDITURE—*Continued.*

Sinking Funds	Interest	Refunds	Judgments and cost of Litigation	Other Miscellaneous Expenditures	Total Ordinary Expenditures
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.					
1,884,833 63	6,989,296 43	–	137,492 55	441,023 57	22,528,470 12
4,066,152 15 [2]	4,716,517 24	235,286 86	47,519 86	3,737,101 06	32,236,461 85
157,171 32	438,089 95	–	– [3]	1,298,993 18	6,464,846 58
815,727 11	1,628,920 58	–	–	174,570 04	6,077,358 15
75,152 03	649,160 96	–	–	210,708 53	1,898,229 93
511,244 00	26,036 00	–	– [4]	636,847 00	5,605,340 43
127,100 00	745,341 02	–	–	–	4,659,336 85
GROUP II—Cities having a Population of 50,000 to 100,000.					
445,516 01	832,587 14	–	–	59,071 45	5,660,438 50
485,271 59	1,032,132 31	–	–	153,450 96	3,740,931 69
24,261 35	151,441 91	–	–	–	1,192,607 34
101,285 67	226,520 58	935 69	–	212,490 63	1,850,444 96
682,208 54	423,600 31	734 33	5,688 81	31,076 45	2,882,581 53
–	600,617 61	–	10,879 78	273,359 30	1,968,129 03
GROUP III—Cities having a Population of 25,000 to 50,000.					
564,029 91	512,378 91	–	16,799 18	751 29	3,661,965 75
64,133 00	111,855 00	–	2,832 00	192,799 00	1,219,985 00
9,341 00	179,056 84	–	–	–	1,420,542 80
34,057 99	154,929 92	–	2,500 00	92,672 19	607,653 04
36,443 28 [6]	114,039 06	–	5,629 84	1,714 53	300,535 37
137,703 59	441,862 42	2,281 52	9,419 04	93,621 14	2,291,298 70
26,555 00	89,267 97	–	–	–	405,275 79
50,798 25	216,872 68	–	–	–	546,146 53
GROUP IV—Cities having a Population of 10,000 to 25,000.					
42,537 50	–	–	–	–	398,727 22
124,180 74	192,855 71	–	–	12,070 90	1,525,633 73
24,008 00	50,192 74	–	–	8,980 40	750,605 67
77,040 11	114,089 16	324 14	943 09	222 14	1,008,367 96
74,548 61	114,521 42	6,061 93	489 48	13,838 95	1,027,029 48
–	2,203 33	803 73	1,252 01	13,074 52	307,855 90
279,000 00	338,831 93	–	– [7]	121,355 39	1,929,026 19
–	–	–	–	–	–
5,296 10	13,054 93	249 61	–	7,216 80	765,942 16
73,414 32	175,951 25	–	1,297 10	105,674 05	799,595 67
12,925 00	45,763 40	–	–	–	–
127,625 74	49,910 39	–	277 52	6,500 00	494,368 70
–	–	–	–	–	223,641 59
33,490 00	132,170 11	–	4,416 87	–	408,699 88
45,981 64	240,031 90	–	1,079 70	19,711 61	735,429 17
[8] 305,041 75	9,033 52	–	– [7]	74,574 65	726,310 52
123 06	69,841 26	1,817 43	–	6,888 42	685,735 05
66,205 57	136,956 83	1,800 83	544 10	19,208 81	851,287 41
–	7,545 01	–	–	–	275,845 55
33,956 46	163,625 66	–	–	196 50 [9]	554,720 17
43,200 72	81,637 39	–	–	–	522,407 07
149,732 46	56,653 25	–	– [10]	209,950 00	779,943 82
115,678 31	254,090 69	–	1,998 68	218,492 60	740,113 91
10,000 00	20,000 00	–	–	1,500 00	132,837 91
[11] 18,668 18 [11]	72,393 44	–	– [12]	56,435 51	882,775 03
8,330 50	16,117 51	29 55	1,101 75	40,963 62	198,247 55
–	–	–	– [13]	57,629 15	939,288 87
28,426 38	46,264 02	307 44	–	33,014 45	199,623 84
188,825 04	77,545 54	–	–	–	789,067 57
1,350 00	37,563 59	64,148 71	–	250 00	221,813 54
36,747 75	48,535 83	–	1,145 74	5,350 84	348,023 88
740 60	18,097 28	–	136 53	10,302 89	144,797 08

[6] Including Discount. [7] Including Prov. War Tax and Patriotic purposes. [8] Including Debenture Interest. Discounts allowed, $338 62 has been deducted from Total of Ordinary Expenditure. [9] Including Loan Cancelled and Administration of Justice. [11] Debt charges exclusive of Utilities. [12] Including Local Imp. Debt Charges and Tax Discounts. [13] Including increased pay to Soldiers' Patriotic Fund, Red Cross and Navy League.

TABLE 6.—EXPENDITURE—*Concluded.*

Name of City or Town	Extraordinary Expenditures				Total Extraordinary Expenditure	Grand Total all Expenditures
	General Debentures or Bonds	Special Debentures or Bonds	Overdrafts	Other Extraordinary Expenditure		
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP 1—Cities having a Population of over 100,000.						
Montreal, Que	10,121,853 77	20,675,372 06	–	857,816 22	31,655,042 05	54,183,512 17
Toronto, Ont	5,576,682 62	–	–	–	5,576,682 62	37,813,141 47
Winnipeg, Man	–	–	–	–	–	6,464,846 58
Vancouver, B.C	–	–	–	–	–	6,077,358 15
Quebec, Que	2,765,307 46	–	–	–	2,765,307 46	4,663,537 39
Hamilton, Ont	273,334 00	295,695 00	959,584 00	196,086 00	1,724,649 00	7,329,989 43
Ottawa, Ont	466,395 67	463,202 91	–	53,760 00	983,358 58	5,642,695 43
GROUP II—Cities having a Population of 50,000 to 100,000.						
Calgary, Alta	207,830 54	170,482 89	–	–	378,313 43	6,038,751 93
Edmonton, Alta	1,004,993 47	–	854,868 62	178,695 40	2,038,557 49	7,779,489 18
Halifax, N.S	–	–	–	–	–	1,192,607 34
St. John, N.B	381,500 00	–	–	–	381,500 00	2,231,944 96
London, Ont	163,565 15	456,163 50	–	104,335 02	724,063 67	3,606,645 20
Victoria, B.C	–	18,124 63	–	51,276 01	69,400 64	2,037,529 67
GROUP III—Cities having a Population of 25,000 to 50,000.						
Regina, Sask	28,720 52	10,280 41	–	–	39,000 93	3,700,996 68
Brantford, Ont	16,906 00	108,320 00	–	[7] 791,522 00	916,748 00	2,136,733 00
Windsor, Ont	231,578 76	–	–	40,812 88	272,391 64	1,692,934 44
Verdun, Que	4,263 75	506 18	17,354 11	66,241 84	88,365 88	696,018 92
Hull, Que	13,400 00	27,027 34	–	[10] 35,220 00	75,647 34	376,182 71
Saskatoon, Sask	586 63	–	–	–	586 63	2,291,885 33
Sydney, N.S	–	–	–	–	–	405,275 79
Three Rivers, Que	260,500 00	200,025 83	–	–	460,525 83	1,006,672 36
GROUP IV—Cities having a Population of 10,000 to 25,000.						
Kingston, Ont	115,183 24	–	14,305 95	–	129,489 19	528,216 41
Moosejaw, Sask	–	–	71,142 18	–	71,142 18	1,596,775 91
Sherbrooke, Que	60,000 00	37,500 00	55,000 00	194,557 56	347,057 56	1,097,663 23
Peterborough, Ont	–	11,334 20	57,352 21	–	68,686 41	1,077,054 37
Sault Ste. Marie, Ont	248,298 20	134,371 92	130,000 00	1,740 33	514,410 45	1,541,439 93
Kitchener, Ont	180,417 65 [14]	–	40,000 00	–	220,417 65	527,273 55
Fort William, Ont	116,291 16	–	790,000 00	46,309 11	952,600 27	2,881,626 46
St. Catharines, Ont	–	–	–	–	–	–
St. Thomas, Ont	140,961 14	57,949 84	2,172 00	[15] 299,224 42	500,707 40	1,266,649 56
Westmount, Que	–	–	–	–	–	799,595 67
Moncton, N.B	–	–	–	–	–	–
Stratford, Ont	83,687 44	–	–	728,301 57	811,989 01	1,306,357 71
Guelph, Ont	–	–	–	–	–	223,641 59
Lachine, Que	–	–	[20] 162,502 93	6,019 15	168,522 08	577,221 96
New Westminster, B.C	72,940 33	–	10,882 79	125 00	83,948 12	819,377 29
Port Arthur, Ont	–	8,361 31	–	19,494 39	27,855 70	754,166 22
Sarnia, Ont	88,442 64	–	133,380 41	60,000 00	281,823 05	967,558 10
Brandon, Man	12,000 00	28,911 15	78,455 82	5,410 65	124,777 62	976,165 03
Niagara Falls, Ont	114,039 57	–	–	–	114,039 57	389,885 12
Outremont, Que	–	–	1,000 00	212,312 12	213,312 12	568,032 29
Galt, Ont	30,000 00	18,558 53	–	–	48,558 53	570,965 60
Belleville, Ont	58,602 65	87,500 00	43,015 12	–	189,117 77	969,061 59
St. Boniface, Man	–	–	–	–	–	740,113 91
Charlottetown, P.E.I	126,370 00	–	–	–	126,370 00	259,207 91
Lethbridge, Alta	–	–	–	–	–	882,775 03
New Glasgow, N.S	20,080 70	–	18,422 98	13,531 40	52,035 08	250,282 63
Owen Sound, Ont	112,827 67	–	–	–	112,827 67	939,288 57
Amherst, N.S	70,150 66	–	24,604 96	14,000 00	108,755 62	308,379 46
Medicine Hat, Alta	–	–	–	–	–	789,067 57
St. Hyacinthe, Que	25,000 00	73,000 00	–	–	98,000 00	319,813 54
Woodstock, Ont	33,824 52	–	67,600 61	[18] 18,023 54	119,448 67	467,472 55
Levis, Que	–	–	–	17,855 64	17,855 64	162,652 72

[1] Exclusive of land and buildings in Capital Account. [2] Including stores and deferred charges of $445,029.93. [3] Including other assets, depreciation fund Hydro-Elect. System and School District Debentures. [4] Including Public Schools. [5] Including accounts receivable and inventories, etc. [6] Including other deferred assets of $1,781,181.33. [7] Consists of expend. on Capital Account such as Schools, St. Railways, Local Imp. and Waterworks, etc. [8] Includes St. Railways, Waterworks, Schools and Hydro. [9] Other assets. [10] Including Bridges. [11] Composes St. Railway Elect. Light & Power Plant, pumping plant and all other works constructed out of Capital Account. [12] Including Waterworks. [13] Including International Milling Co. Bonds $124,058.76 and Victory Bonds of $63,265.83. [14] Included

TABLE 7.—AVAILABLE ASSETS.

Assets (available)					
Cash on hand at end of year	Sinking Funds	Taxes in arrears or levied but not due	Saleable Lands, and Buildings	Other debts due	Total Assets (available)
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.					
203,969 22	3,192,830 68	6,992,610 00	63,000,000 00	8,514,333 41	81,903,743 31
5,241,286 19	27,863,994 71	3,845,928 06	[1] 691,064 49	1,787,557 18	[2] 39,874,860 56
–	10,456,969 84	3,793,227 37	39,588,014 79	[3] 6,419,428 70	60,257,640 70
345,621 89	8,238,152 82	5,255,816 57	17,331,906 04	223,148 33	31,394,645 65
153,000 62	371,208 84	617,901 69	12,342,364 24	1,629,271 14	[19] 15,814,076 40
81,250 71	2,784,869 50	2,365,964 78	9,011,858 66	2,432,414 93	16,675,458 58
1,460 01	4,367,563 75	463,946 07	16,479,126 74	39,538 03	21,351,634 60
GROUP II—Cities having a Population of 50,000 to 100,000.					
769,953 52	2,810,008 81	4,939,928 09	2,012,848 42	396,761 38	10,929,500 22
217,631 48	[4] 5,259,174 51	6,594,297 58	23,037,973 76	[5] 694,841 73	[6] 37,585,100 39
–	–	–	–	–	–
3,646 92	1,247,232 14	111,258 56	3,317,362 50	22,327 63	4,701,827 75
85,966 75	1,069,209 32	88,705 54	2,521,932 14	6,348,680 10	10,114,493 85
79,215 35	2,174,114 95	1,963,053 30	3,732,935 60	–	7,949,319 20
GROUP III—Cities having a Population of 25,000 to 50,000.					
287,799 68	2,004,583 87	660,434 30	1,794,649 50	87,116 64	4,834,583 99
695 00	895,328 00	8,471 00	[8] 2,502,066 00	[9] 2,276,629 00	5,683,189 00
71,178 54	53,470 58	100,431 35	339,000 00	3,541,629 18	4,105,709 65
45,702 75	244,659 26	333,870 93	2,653,548 49	676,884 65	3,954,666 08
26,309 31	137,433 84	133,980 68	2,347,243 24	26,500 00	2,671,467 07
199,126 56	1,662,444 85	1,045,269 52	–	[11] 8,210,271 73	11,117,112 66
22,346 61	486,252 28	123,000 00	[12] 1,350,000 00	75,000 00	2,056,578 89
10,448 78	398,497 79	245,151 10	3,340,803 24	423,207 15	4,418,108 06
GROUP IV—Cities having a Population of 10,000 to 25,000.					
1,955 80	294,414 51	1,000 00	–	[9] 1,729,020 68	2,026,390 99
220,473 68	864,682 87	761,746 40	545,355 00	101,255 22	[13] 2,680,837 76
4,161 39	350,979 90	102,330 21	2,832,898 73	1,248,143 73	4,539,013 96
–	786,941 02	31,548 76	1,051,329 52	279,204 56	2,148,996 86
8,026 53	570,815 33	171,159 29	829,709 43	1,983,463 39	3,563,173 97
51,964 34	–	12,242 75	–	1,893 84	66,100 94
25,501 31	2,217,448 21	724,434 64	–	582,398 66	3,549 782 82
–	1,099,199 40	53,883 14	115,116 06	4,343,913 13	–
31,762 14	–	86,628 27	293,105 82	46,259 38	457,755 61
250 00	988,127 46	180,712 70	2,606,152 00	3,092,274 85	6,867,517 01
–	–	–	–	–	–
463 74	775,153 58	98,800 00	446 10	102,958 00	1,423,475 32
23,202 86	–	22,898 55	–	–	210,218 57
18,466 06	83,697 44	142,328 58	2,564,453 50	2,579 35	2,811,524 93
12,285 09	582,304 18	294,817 08	5,212,919 84	136,182 96	6,239,509 15
1,313 72	1,102,273 47	683,105 01	1,330,925 48	318,180 93	3,435,798 61
586 13	7,243 47	66,793 50	1,301,605 77	79,552 38	1,446,781 25
61,567 24	148,444 11	411,700 00	3,229,956 87	48,562 50	3,900,230 72
–	–	83,525 75	3,000 00	–	86,525 75
77,793 91	260,166 82	130,538 49	719,957 41	4,024 56	[16] 3,369,984 95
–	568,332 90	37,934 40	–	–	606,267 30
29 00	441,234 40	47,227 55	106,645 11	1,434,772 50	2,029,908 86
5,741 14	1,094,341 67	1,061,811 32	204,379 92	7,524 84	2,373,788 89
7,015 92	101,300 00	5,000 00	714,000 00	461,060 00	1,288,313 92
141,598,10	785,270 80	459,184 92	136,966 13	[17] 497,541 23	2,020,561 18
46,604 40	155,674 04	23,631 25	918,246 50	–	1,144,156 19
105,201 83	586,879 55	131,906 95	1,100,880 32	248,172 00	2,173,031 65
292 26	259,644 06	24,273 06	910,970 89	57,126 22	1,252,306 49
7,324 39	671,083 20	682,320 85	3,353,920 62	116,034 19	4,830,683 25
18,619 72	9,857 14	22,363 14	1,312,617 84	–	1,363,457 84
14,527 17	361,265 85	12,717 04	400,000 00	67,600 61	856,110 67
6,724 73	1,775 60	32,917 86	149,448 25	12,298 91	203,165 35

in Gen. Debentures or Bonds. [15] Including Bills Payable and Local Imp. [16] Including Improvement and Suspense Outlays, $2,172,503.76. [17] Including Capital Expenditure not Bonded and Bonds. [18] Including Housing Commission. [19] Including Railroad Shares, Bank and Stock Account. [20] Temporary loans.

TABLE 8.—LIABILITIES.

Name of City or Town	Liabilities			
	Bonded Debt	Floating Debt	All Other Liabilities	Total Liabilities
	$ cts.	$ cts.	$ cts.	$ cts.
GROUP I—Cities having a Population of over 100,000.				
Montreal, Que	118,892,119 29	5,910,207 45	–	124,802,326 74
Toronto, Ont	101,832,912 72	1,609,112 88	6,415,975 91	109,849,001 51
Winnipeg, Man	39,737,397 94	4,451,908 81	1,913,631 65	46,122,938 40
Vancouver, B.C	29,054,523 97	–	–	29,054,523 97
Quebec, Que	15,535,386 76	–	167,155 29	15,702,542 05
Hamilton, Ont	13,219,361 21	1,244,448 79	625,105 74	15,088,921 74
Ottawa, Ont	18,031,193 75	1,349,428 91	43,133 56	19,423,756 22
GROUP II—Cities having a Population of 50,000 to 100,000.				
Calgary, Alta	22,864,282 75	2,510,475 78	2,475,328 22	27,850,086 75
Edmonton, Alta	[1] 28,725,827 27	[2] 5,456,564 29	[3] 3,402,708 93	37,585,100 49
Halifax, N.S	–	–	–	–
St. John, N.B	5,015,726 66	–	98,835 11	5,111,561 77
London, Ont	7,381,247 67	237,000 00	645,035 79	8,263,283 46
Victoria, B.C	18,200,694 66	1,001,000 00	[4] 3,622,863 56	22,823,558 22
GROUP III—Cities having a Population of 25,000 to 50,000.				
Regina, Sask	10,893,857 79	448,181 10	333,921 91	11,675,960 80
Brantford, Ont	4,098,234 00	998,816 00	105,781 00	5,202,831 00
Windsor, Ont	3,055,727 60	320,500 00	505,060 05	3,881,287 65
Verdun, Que	2,986,500 00	344,047 02	157,824 64	3,488,371 66
Hull, Que	2,270,943 65	155,000 00	2,900 00	2,428,843 65
Saskatoon, Sask	8,886,371 74	550,595 16	797,151 87	10,234,118 77
Sydney, N.S	2,013,500 00	55,000 00	7,000 00	2,075,500 00
Three Rivers, Que	3,969,000 00	437,638 83	429,144 20	4,835,783 03
GROUP IV—Cities having a Population of 10,000 to 25,000.				
Kingston, Ont	1,809,530 90	–	214,167 49	2,023,698 39
Moosejaw, Sask	5,958,249 85	1,384,448 49	997,335 66	8,339,034 00
Sherbrooke, Que	2,304,930 00	851,751 71	1,682,362 25	4,539,043 96
Peterborough, Ont	2,550,914 02	281,790 15	29,586 19	2,862,290 36
Sault Ste. Marie, Ont	2,731,964 26	245,914 16	–	2,977,878 42
Kitchener, Ont	2,002,231 29	65,000 00	23,255 30	2,090,486 59
Fort William, Ont	8,265,746 07	880,684 47	–	9,146,430 54
St. Catharines, Ont	3,608,375 52	324,120 29	1,313,993 25	5,246,489 06
St. Thomas, Ont	260,805 20	10,167 25	–	270,972 45
Westmount, Que	4,318,166 66	22,788 80	2,526,501 75	6,867,517 01
Moncton, N.B	–	–	–	–
Stratford, Ont	2,298,233 13	83,000 00	42,976 00	2,424,209 13
Guelph, Ont	2,073,729 56	–	–	2,073,729 56
Lachine, Que	2,419,000 00	97,202 50	92,846 30	2,609,048 80
New Westminster, B.C	4,503,527 00	–	[4] 1,730,968 52	6,234,495 52
Port Arthur, Ont	[5] 4,145,535 50	77,154 94	377,416 39	4,600,106 83
Sarnia, Ont	1,240,872 35	201,399 53	95,122 05	1,540,393 93
Brandon, Man	3,160,246 05	598,823 55	–	3,759,069 50
Niagara Falls, Ont	909,960 70	308,748 40	–	1,218,709 10
Outremont, Que	2,856,000 00	–	197,401 57	[6] 3,321,446 47
Galt, Ont	1,744,010 98	264,958 13	–	2,008,969 11
Belleville, Ont	1,392,852 37	72,678 53	–	1,465,530 90
St. Boniface, Man	[7] 3,813,788 88	1,231,652 33	226,086 68	5,271,527 89
Charlottetown, P.E.I	588,600 00	–	250,000 00	838,600 00
Lethbridge, Alta	3,925,257 34	281,600 00	366,542 51	4,573,399 85
New Glasgow, N.S	950,270 00	3,842 84	18,695 27	972,808 11
Owen Sound, Ont	[8] 1,266,075 68	117,495 12	118,413 85	1,501,984 65
Amherst, N.S	966,000 00	64,163 12	–	1,030,163 12
Medicine Hat, Alta	3,746,672 67	235,599 26	500,965 88	4,483,237 81
St. Hyacinthe, Que	591,707 24	721,018 00	593 25	1,313,318 49
Woodstock, Ont	980,468 05	–	–	980,468 05
Levis, Que	754,018 92	142,000 00	53,692 42	949,711 34

[1] Including Public Schools. [2] This is short term loans against tax arrears and hypotheeated debentures. [3] Including Accounts and Bills Payable and Deferred Liabilities. [4] Including Local Improvement Bonded Debt minus the City's share. [5] Outstanding Debentures. [6] Including Sinking Fund Accumulated and Reserves. [7] Current Loans. [8] Bank Overdraft on General Account, Bills Payable, and Construction Account $708,692.66; Local Imp. Account $2,828,631.90 and other liabilities $85,539.00.

CANADA
BUREAU FÉDÉRAL DE LA STATISTIQUE
DIVISION DES FINANCES

STATISTIQUES MUNICIPALES

CITÉS ET VILLES DE 10,000 HABITANTS ET PLUS.

OTTAWA
THOMAS MULVEY
IMPRIMEUR DE SA TRÈS EXCELLENTE MAJESTÉ LE ROI
1920

[No 17—1921.]

STATISTIQUES URBAINES, 1919.

PRÉFACE.

Depuis plusieurs années, les fonctionnaires, les établissements financiers, les économistes, en un mot tous ceux qu'intéresse le problème de la péréquation des impôts, ressentaient le besoin de statistiques comparatives des principales cités et villes du Canada, tout spécialement des statistiques financières municipales. Les municipalités sont placées sous la juridiction provinciale; il fallait donc, tout d'abord, faire cesser la diversité de leurs méthodes de comptabilité et les amener à l'adoption d'un système uniforme. En 1918, le Bureau Fédéral de la Statistique élabora et soumit aux provinces un projet qui proposait un système de comptabilité et qui établissait la coopération des provinces et du Bureau. Mais l'on dut bientôt admettre que la question était plus complexe qu'on ne l'avait d'abord supposé et que tout changement entraînerait des répercussions imprévues. Il fut donc décidé de recourir à une conférence des fonctionnaires fédéraux et provinciaux, où la question serait examinée sous toutes ses faces et traitée à fond.

Mais en attendant qu'une solution intervienne, on a jugé qu'il était possible de procéder à une investigation limitée, sur les bases suggérées. Un questionnaire fut donc dressé et envoyé aux municipalités dont la population atteint au moins 10,000 habitants; les réponses faites à ce questionnaire ont servi à l'établissement du présent rapport. Le Bureau exprime ici ses remerciements aux fonctionnaires municipaux qui ont rempli ces formules, quelquefois au prix d'un travail ardu, lorsque leur comptabilité ne concorde pas avec le questionnaire. Sans leur bienveillante coopération, il eut été impossible d'obtenir les données nécessaires, même dans un cadre restreint, en raison non seulement des diverses modalités de tenue des livres, mais aussi de la signification différente donnée à certaines expressions, d'une localité à une autre.

Cinquante-trois agglomérations urbaines, comptant 10,000 habitants ou plus, ont participé à notre enquête. Quelques-uns des rapports qui nous ont été envoyés, notamment ceux de Guelph, de Moncton et de St. Catharines n'étaient pas suffisamment détaillés pour servir à nos fins; ils ont dû être laissés de côté. D'autre part, les municipalités, de Chatham, Ont., Shawinigan Falls, P.Q., et Glace Bay, N.-E., ont négligé de nous fournir les informations demandées.

Les données recueillies ont été groupées dans une série de huit tableaux, dont on trouvera l'énumération à la table des matières.

Nous répétons que le présent rapport est nécessairement imparfait; il démontre, toutefois, la possibilité d'établir des statistiques municipales, comparables de ville à ville, lorsqu'un accord définitif aura été conclu entre les intéressés. L'expérience déjà acquise permettra certaines additions aux formules, notamment dans la classification de la partie financière. Si l'utilité de cette tentative est démontrée, le Bureau la renouvellera et en élargira le cadre, de manière à embrasser un plus grand nombre de municipalités.

Ce rapport est l'œuvre du lt.-col. J. R. Munro, chef de la Division des Finances de ce Bureau.

R. H. COATS,
Statisticien du Dominion.

NOTE.

Le manque d'espace n'a pas permis de placer à la tête des tableaux la traduction française des titres et des sous-titres. Toutefois, afin de faciliter l'étude de ce rapport par ceux qui ne sont pas familiers avec la langue anglaise, la table des matières en français contient plus de détails que la version anglaise et constitue une traduction littérale des titres et sous-titres des tableaux, dans l'ordre exact où ils sont imprimés dans le texte anglais.

A la suite de la table des matières on a placé une traduction des renvois au bas des pages, qui se trouvent dans le texte anglais, avec indication de la page et du numéro de chaque renvoi.

Afin de permettre la comparaison entre les cités et les villes de population à peu près semblable, ou les a divisées en plusieurs groupes, ainsi composés.

GROUPE I.—Cités dont la population atteint ou dépasse 100,000 habitants.

GROUPE II.—Cités ayant une population de 50,000 à 100,000 habitants.

GROUPE III.—Cités ayant une population de 25,000 à 50,000 habitants.

GROUPE IV.—Cités ayant une population de 10,000 à 25,000 habitants.

Dans le tableau 3, pages 13 et 15, la huitième colonne est consacrée à la méthode employée pour la purification de l'eau des aqueducs. Nous donnons ci-dessous les termes dont on s'est servi dans le texte anglais avec leur traduction en regard:

ANGLAIS.	FRANÇAIS.
Double filtration	Double filtration.
Slow sand and drifting sand	Filtres rapides et filtres lents par le sable.
None	Aucune.
Chloramine	Acide chlorique.
Coagulation	Coagulation.
Gravity filter	Filtre automatique.
Hypochloride	Hypochlorite.
Natural sand and gravel filter	Filtration naturelle par le sable et le gravier.
Chlorinated	Au chlore.
Filtration with Alum	Filtration par l'alun.
Mechanical Chlorine	Au chlore mécaniquement.
Sedimentation and filtration	Sédimentation et filtration.
Chlorine	Chlore.
Natural filter through sand	Filtration naturelle par le sable.
Chlorine gas	Chlore gazeux.
Natural filtration through sand into infiltration galleries.	Filtration naturelle dans des galeries de sable.
Liquid Chlorine	Chlore liquide.
Mechanical filters, small part	Filtres mécaniques (petite partie).
Aeration and sterilization	Aération et stérilisation.
Chlorination, coagulation, aeration and filtration	Chlore, coagulation, aération et filtration.
Sedimentation basin Chlorination Automatic	Bassin de sédimentation, chlorination automatique
Pressure filters	Filtres à pression.
Automatic filters	Filtres automatiques.
Automatic Chlorine	Automatiquement, par le chlore.
Mechanical and sand filter	Filtre mécanique et sable filtrant.
Slow sand filtration	Filtration lente par sable.
Filters	Filtres.
Gravity filter	Filtre automatique.

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Bâtiments	$ 9	10
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Nombre de bouches d'eau	16	4
Nombre de chevaux	16	5
Pompes—		
A vapeur—		
Automobiles, nombre	16	6
A chevaux, nombre	16	7
A gazoline—		
Automobiles, nombre	16	8
A chevaux, nombre	16	9
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Automobiles, nombre	17	1
A chevaux, nombre	17	2
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Enfants de moins de 12 ans—		
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Blessés, nombre	20	5
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Sur le loyer $ c.	25	3
Autres taxes spéciales $ c.	25	4
Total de la taxation obligatoire $ c.	25	5
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Licences de chiens	25	8
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Total, licences et patentes	25	10
Nom de la cité ou de la ville	26	1
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Hôpitaux $ c	39	4
Prisons 2 c.	39	5
Autres charités, etc $ c.	39	6
Total, bienfaisance et maisons de détention $ c.	39	7
Nom de la cité ou ville	40	1
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Police—		
Traitements et appointements $ c.	40	2
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Total, police $ c.	40	4
Pompiers—		
Traitements et appointements $ c.	40	5
Equipement $ c	40	6
Total, pompiers $ c	40	7
Utilités publiques municipalités—		
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Gaz $ c.	41	2
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Célébrations et réceptions $ c.	42	5
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TRADUCTION DES RENVOIS AU BAS DES PAGES.

PAGE 5.—[1]Recensement du Canada. [2]Estimation des fonctionnaires municipaux. [3]Année 1920. [4]Année 1918. [5]50% des améliorations sont exemptes. [6]Terrain et bâtiments seulement. [7]Les chiffres manquent. [8]Terrain seulement. [9]Y compris évaluation des emplacements, et des bâtiments à l'usage du commerce. [10]Totalement exempts, assujettis uniquement à la taxe d'expropriation. [11]Année 1903. [12]Ces propriétés ne sont pas évaluées. [13]Y compris l'évaluation commerciale. [14]Année 1905. [15]En 1911, l'évaluation des bâtiments était de 60% de leur valeur, tandis qu'en 1910 elle n'était que de 45%. [16]Y compris $1,646,790 de propriétés assujetties à la taxe scolaire seulement. [17]Chiffres d'affaires et revenu. [18]Dont $2,507,136 assujettis à la taxe scolaire. [19]Ceci comprend les exemptions en faveur des veuves et des manufacturiers. Les églises, les écoles et les propriétées du gouvernement sont également exemptées, mais ne sont pas évaluées.

PAGES 6-7.—[1]Statistiques générales pour l'année indiquée—Recettes et dépenses pour 1918. [2]Taux de la taxe de façade. [3]La ville de Steelton a été annexée le 1er janvier 1918. [4]Chiffres manquants. [5]Commissaires. [6]Depuis l'annexion de Stratheona. [7]Dont $1,646,790 de propriétés assujetties à la taxe scolaire seulement. [8]Il existe aussi une taxe de police de 2½ mills, et une taxe d'éclairage de 3oc. par pied de façade. [9]Y compris une population flottante de 2,000 habitants. [10]Documents incendiés. [11]Y compris les bâtiments et la taxe commerciale. [12]Compris dans l'évaluation totale des propriétés taxables. [13]La population en l'année 1920. [14]Y compris évaluation commerciale. [15]Moins une réduction de 10%.

PAGES 8-9.—[1]Statistiques générales pour l'année indiquée—Recettes et dépenses pour 1918. [2]Non indiqué. [3]On ne possède que le total des exemptions. [4]Les chemins de fer sont compris dans "autres exemptions". [5]Ces propriétés ne sont pas évaluées. [6]Les constructions sont exemptes à concurrence de 50%. [7]Comprenant les cimetières. [8]Les bâtiments ne sont évalués qu'à 50% de leur valeur. [9]Les exemptions sont celles de l'année 1918. [10]Non divisées. Voir total des bâtiments à l'usage des institutions de bienfaisance. [11]Il en est tenu compte au moyen d'une évaluation spéciale ou fixe, comprise dans l'évaluation totale des propriétés taxables. [12]Compris avec bâtiments. [13]Compris avec terrain. [14]Y compris comté de Hastings et bâtiments de la compagnie Hydro-électrique. [15]Comprend propriétés vendables.

PAGES 10-11. [1]Non indiquées. [2]399,95 sont en eau. [3]A l'exclusion des terrains scolaires. [4]Figurent avec ceux en asphalte. [5]Compris dans "autres pavages". [6]Figurent avec Tarvia. [7]Compris dans "autres pavages". [8]Compris dans béton. [9]Compris dans pares publics. [10]Y compris égouts d'eaux de surface.

PAGES 12-13.—[1]Non indiquées. [2]17,000,000 de gallons d'eau traités à l'hypochlorite. [3]Pour la cité et les municipalités voisines. [4]Aqueduc seulement. [5]Y compris le coût de l'exploitation et de l'entretien des usines de filtration par le sable, l'intérêt et le fonds d'amortissement sur ces usines. La oblorination de l'eau est faite par le service d'hygiène. [6]Construit par des particuliers et plus tard acheté par la ville.

PAGES 14-15.—[1]Non indiqué. [2]Construit par des particuliers et plus tard acheté par la ville. [3]Est fourni par Montreal Water and Power Co.

PAGES 16-17.—[1]Porte également 146 pieds d'autres échelles. [2]Ces hommes agissent comme agents de police. [3]Y compris cinq volontaires. [4]Pompiers volontaires. [5]Y compris hangars à dévidoirs. [6]Y compris six volontaires.

PAGES 18-19. [1]Système téléphonique d'alarme.

PAGES 20-21. [1]Chiffres inconnus. [2]Compris dans arrosage chimique et jet d'eau.

PAGES 22-23.—[1]Voiture mixte servant de patrouille et d'ambulance. [2]Ces hommes sont également pompiers. [3]Chiffres inconnus. [4]Y compris perte sur les bâtiments et leur contenu. [5]Sept des agents sont à cheval, la nuit. [6]Compris avec le contenu. [7]Compris avec bâtiments. [8]Les mêmes servent pour les pompiers.

PAGES 24-25. [1]Pas de division. Voir la colonne du total des taxes. [2]Pas de division; voir la colonne du total des licences. [3]Compris dans la colonne précédente. [4]Compris dans la taxe de l'année courante. [5]Basée sur la dimension des locaux occupés. [6]Taxe d'amusement. [7]Compris dans la taxe de capitation. [8]Y compris taxe de commutation. [9]Taxe de voirie. [10]Y compris taxe de guerre provinciale, taxe du fonds patriotique, des hôpitaux, des pares et des bibliothèques. [11]Moins déduction de $411.34 [12]Moins escompte de $6'560.18. [13]Taxe de chemin de fer. [14]Non indiqué.

PAGES 26-27.—[1]Sous cet en-tête figurent les loyers des conduits souterrains occupés par les compagnies d'éclairage et de force motrice électriques. [2]Fourrière. [3]Compris dans la colonne de l'éclairage et de force motrice électriques. [4]Compris avec "autres licences".

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CANADA

DOMINION BUREAU OF STATISTICS

CENSUS OF INDUSTRY, 1918

LUMBER, LATH, SHINGLES, ETC.

1918

(Prepared in collaboration with the Dominion Forestry Branch; the Department of Crown Lands, Nova Scotia; the Department of Lands and Mines, New Brunswick; the Department of Lands and Forests, Quebec; and the Department of Lands, British Columbia)

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 17a—1921]

CENSUS OF INDUSTRY, 1918.

LUMBER, LATH, SHINGLES, Etc.

Preface.

The statistics of the lumber industry presented in this report were collected and compiled during 1919 for the calendar year 1918. Acknowledgments are tendered to the Department of Crown Lands, Nova Scotia; the Department of Lands and Mines, New Brunswick; the Department of Lands and Forests, Quebec; and the Department of Lands, British Columbia, for their assistance in preparing and revising the lists of operating concerns.

The report has been compiled and written under a co-operative arrangement between the Bureau of Statistics and the Forestry Branch of the Department of the Interior, the work in the bureau being performed by Mr. J. C. Macpherson, whilst the report was checked and edited by Mr. R. G. Lewis, B.Sc.F., of the Forestry Branch.

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Dominion Statistician.

Dominion Bureau of Statistics,
Ottawa, July, 1920.

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THE LUMBER INDUSTRY, 1918.

Introduction and Summary.

In the value of its production, the lumber industry in Canada reached the highest point in its history during 1918, with a total of $146,333,192. The items comprising this total were: sawn lumber, $103,700,620; shingles, $8,184,448; lath, $1,369,616, and miscellaneous products, $33,078,508. A table showing the production of lumber, lath and shingles by quantities and values since 1908 is presented below. From 1908 to 1916 the statistics were collected and compiled by the Forestry Branch of the Interior Department, and since 1916 by the Dominion Bureau of Statistics in co-operation with the Forestry Branch.

CUT AND VALUE OF LUMBER, SHINGLES AND LATH, 1908-18.

Year.	Lumber cut.		Shingle cut.		Lath cut.	
	Quantity M. Ft. bd. measure.	Value.	Quantity. M.	Value.	Quantity. M.	Value.
		$		$		$
1908	3,348,176	54,338,036	1,499,396	3,101,996	671,562	1,487,125
1909	3,814,942	62,819,477	1,988,753	3,701,182	822,124	1,979,034
1910	4,451,652	77,503,187	1,976,640	3,557,211	851,953	1,943,544
1911	4,918,202	75,830,954	1,838,474	3,512,078	965,235	2,212,226
1912	4,389,723	69,475,784	1,578,343	3,175,319	899,016	2,064,622
1913	3,816,642	65,796,438	1,485,279	3,064,641	739,678	1,783,283
1914	3,946,254	60,363,369	1,843,554	3,688,746	625,010	1,585,484
1915	3,842,676	61,919,806	3,089,470	5,734,852	793,226	2,040,819
1916	3,490,550	58,365,349	2,897,562	5,962,933	665,588	1,743,940
1917	4,151,753	83,655,097	3,920,956	8,431,215	616,949	1,828,018
1918	3,886,631	103,700,620	2,662,521	8,184,448	438,100	1,369,616
Average 1908-18	4,005,196	70,342,556	2,170,995	4,737,693	735,313	1,821,610

Comparative statistics.—The following table presents statistics of the lumber industry for the calendar years 1917 and 1918. The number of mills in operation increased by 216 in 1918, or 7·50 per cent; capital investment increased by $32,988,721, or 22·10 per cent; employees on salaries increased by 409, or 12·63 per cent, and salaries by $592,580, or 12·39 per cent; employees on wages in woods, drives and mills increased in number by 3,985, or 7·47 per cent, and the wages paid them by $9,999,831, or 29·06 per cent; the cost of fuel increased by $7,060, or 1·21 per cent; miscellaneous expenses by $5,028,844, or 28·45 per cent; materials and mill supplies by $5,151,804, or 12·65 per cent; and the value of products by $30,448,287, or 26·28 per cent.

COMPARATIVE STATISTICS OF THE LUMBER INDUSTRY 1917 AND 1918.

—		1917	1918	Increase over 1917.	
				Amount	Per cent.
Mills reporting	No	2,879	3 095	216	7·50
Capital invested	$	149,266,019	182,254,740	32,988,721	22·10
Employees on salaries	No	3,159	3,568	409	12·63
Salaries	$	4,781,300	5,373,880	592,580	12·39
Employees on wages	No	53,318	57,303	3,985	7·47
Wages	$	34,412,411	44,412,242	9,999,831	29·06
Fuel cost	$	585,446	592,506	7,060	1·21
Miscellaneous expenses	$	17,678,288	22,707,132	5,028,844	28·45
Cost of materials	$	40,725,028	45,876,832	5,151,804	12·65
Value of products	$	115,884,905	146,333,192	30,448,287	26·28

Comparative statistics of the industry are presented in the following summary table by provinces for the census years 1917 and 1918, showing (*a*) rank in production, (*b*) number of mills in operation, (*c*) capital invested, (*d*) employees, (*e*) salaries and wages, (*f*) cost of materials and (*g*) value of products.

COMPARATIVE STATISTICS BY PROVINCES, 1917 AND 1918.

Provinces.	Rank in production.	Mills reporting.	Capital.	Employees	Salaries and Wages.	Cost of Materials.	Value of Products.
1917	No.	No.	$	No.	$	$	$
Alberta	8	52	1,088,055	377	296,934	142,818	788,954
British Columbia	1	251	41,848,719	14,744	12,442,583	13,969,312	33,527,560
Manitoba	7	29	2,416,167	835	525,221	286,841	1,209,173
New Brunswick	4	255	21,153,328	7,031	4,119,699	6,210,006	15,191,275
Nova Scotia	5	462	8,865,356	3,204	1,399,665	1,579,845	5,185,258
Ontario	2	603	43,881,845	17,245	11,575,659	9,868,769	31,054,315
Prince Edward Island	9	60	127,502	68	26,856	36,905	151,633
Quebec	3	1,151	27,551,019	11,503	7,764,083	8,106,134	26,630,120
Saskatchewan	6	16	2,301,028	1,470	1,043,011	287,518	2,146,615
Canada		2879	149,366,019	56,477	39,193,711	40,488,148	115,884,905
1918							
Alberta	8	36	468,534	261	194,937	101,197	490,572
British Columbia	3	201	42,408,448	14,015	15,027,765	15,515,229	39,442,660
Manitoba	7	31	2,581,239	952	709,097	189,768	1,316,792
New Brunswick	4	224	25,356,855	6,942	4,605,387	5,298,535	14,977,974
Nova Scotia	5	419	5,057,956	2,615	1,237,791	1,201,596	4,563,892
Ontario	1	875	46,862,344	17,780	14,751,613	10,309,822	42,872,958
Prince Edward Island	9	48	135,290	55	30,711	67,347	199,684
Quebec	2	1,247	57,201,820	16,915	12,030,237	12,749,152	40,199,895
Saskatchewan	6	13	2,149,109	1,328	1,192,400	308,079	2,258,450
Yukon	10	1	33,145	5	6,184	1,832	10,315
Canada		3,095	182,254,740	60,868	49,786,122	45,743 557	146,333,192

British Columbia, which held first rank in value of production in 1917, occupied third place in 1918, being exceeded by Ontario and Quebec, by $3,430,298 and $757,235 respectively. All the other provinces have maintained their relative positions.

In the number of mills in operation, Quebec stands first with 1,247; Ontario, second with 875; Nova Scotia third with 419; New Brunswick fourth with 224, and British Columbia fifth with 201. There is a decrease in the number of active mills in all the provinces except Quebec, Ontario and Manitoba, where the increases were 96, 272 and 2 in the order named.

The total capital invested in operating mills in the Dominion rose from $149,266,019 in 1917 to $182,254,740 in 1918, an increase for the year of $32,988,721, or 22·10 per cent.

The total number of persons employed shows an increase for the Dominion of 4,394, or 7·8 per cent. The total of persons employed during the year was 60,868, of whom 3,568 were salaried employees and 57,303, wage-earners. The total amount paid to salaried employees in 1918, was $5,373,880, an increase over the previous year of $592,580, or 12·39 per cent. Employees working for wages in the woods and mills numbered 57,303 in 1918, as against 53,318 in 1917, and the amount paid in wages rose from $34,412,411 in 1917 to $44,412,242 in 1918, an increase of $9,999,831, or 29·06 per cent.

Production.

The production of lumber, lath, shingles and other saw-mill products for the year 1918, from 3,095 operating mills was respectively:

Lumber	3,886,631 thousand feet valued at	$ 103,700,620
Lath	438,100 thousands, valued at	1,369,616
Shingles	2,662,521 thousands, valued at	8,184,448
Pulpwood	1,516,783 cords, valued at	18,416,438
Miscellaneous products (quantities not specified)		14,662,070
A total value of production in 1918 of		$ 146,333,192

Lumber.—Table I shows the lumber cut for the years 1917 and 1918 by provinces, number of mills in operation, quantity and value of cut, average value per thousand feet, per cent distribution of cut and the increase or decrease per cent over 1917.

The lumber cut for the Dominion shows a decrease during the year 1918 of 265,072 thousand feet, as compared with 1917. All the provinces show decreases except Quebec, in which there was an increase of 13,510 thousand feet. The increased value of the lumber cut for the year is due principally to the rise in the market price. For all classes of lumber, the average price at the mill in 1917 was $20.15 per thousand feet, as against $26.68 in 1918, an increase of $6.53 per thousand feet, or 32·4 per cent.

Table II presents statistics of the lumber cut, by kinds of wood, for the Dominion. More than twenty-five different kinds of wood were reported, embracing approximately seventy different species. Spruce, white pine and Douglas fir continue to maintain their relative positions as the principal kinds of wood used in lumber production as in former years. There was a large decrease in the cut of spruce lumber in 1918, when compared with the preceding year, amounting to 323,781 thousand feet. Hemlock, cedar, red pine, balsam fir and yellow or bull pine also show decreases in the cut, while, on the other hand, white pine, Douglas fir, tamarack, all of the hardwoods (except beech and walnut) and custom sawing show small increases. Custom sawn lumber was not specified in the returns by kinds of wood, the total cut being 208,448 thousand feet, valued at $4,254,014.

Tables III and IV deal with the production of lumber classified as hardwoods and softwoods. Table III shows the quantity and percentage of the total cut by provinces, and Table IV the cut by kinds of wood. The cut of softwoods decreased by 1·7 per cent when compared with 1917, while hardwoods increased by the same percentage. The principal hardwoods as shown in table IV are birch, maple, basswood, elm, poplar and beech, and they represent nearly 94 per cent of the total cut, being 189,296 thousand feet in a total of 201,667 thousand feet.

Tables V to XIII inclusive, present statistics of the lumber cut by provinces and kinds of wood, and are arranged in the numerical order of production for the year. The tables show also for each class of wood sawn: (*a*) the quantity of the cut, (*b*) per cent distribution of the cut, (*c*) the value of the cut, and (*d*) the average value per thousand feet, board measure.

In British Columbia there was a decrease in the total cut of 42,908 thousand feet, to which cedar contributed 30,457 thousand feet; balsam fir, 17,385 thousand feet; and white pine, 14,190 thousand feet. Douglas fir, spruce and tamarack on the other hand show increases in the cut of 9,666, 14,045 and 24,718 thousand feet respectively. The average value per thousand feet rose from $18.75 in 1917 to $24.49 in 1918, or an increase of 30 per cent. In Ontario the cut remained almost stationary, there being a decrease of 202 thousand feet as compared with 1917. White pine, hemlock and red pine show decreases in the cut of 26,384, 43,150 and 2,200 thousand feet respectively, but these decreases were counterbalanced by increases in the cut of spruce of 14,550 thousand feet, maple of 11,777, jack pine of 6,799, basswood of 5,295, and custom sawn lumber of 36,416 thousand feet. The average value of Ontario's lumber rose from $22.91 in 1917 to $30.78 in 1918, being an increase of 34·5 per cent.

The province of Quebec is the only one showing an increase in cut over 1917, amounting to 13,510 thousand feet. Spruce lumber shows a decrease of 89,068 thousand feet as compared with the previous year, but this loss was made up by increases in the cut of almost all the other species, including custom sawn lumber. The increase in the average selling price was $4.66 per thousand feet, or 23 per cent.

New Brunswick shows a decrease in the cut of all classes of lumber of 150,872 thousand feet. Spruce alone shows a drop of 189,596 thousand feet, hemlock of 10,030 thousand feet and red pine of 4,557 thousand feet. White pine increased by 32,188 thousand feet, cedar by 7,199 thousand feet, and birch by 9,309 thousand feet The average price, which was $19.08 per thousand feet in 1917, advanced to $27.54 in 1918, an increase of approximately 44 per cent.

In Nova Scotia the total cut fell from 236,710 thousand feet in 1917 to 176,332 thousand feet in 1918, a decrease of 60,378 thousand feet. Of this decrease spruce accounted for 49,228 thousand feet, hemlock for 5,083 thousand feet and beech for 9,596 thousand feet. Birch, maple, and poplar were the principal species showing an increase in the cut. The average price per thousand feet for all kinds of lumber increased from $18.61 in 1917 to $23.21 in 1918, or approximately 25 per cent.

The Prairie Provinces all show decreases in the volume of the cut. Saskatchewan fell short of the 1917 cut by 12,540 thousand feet, Alberta by 11,239 thousand feet, and Manitoba by 169 thousand feet. Almost the entire decrease is due to the fall in the cut of spruce lumber. As in the other provinces, the advance in the selling price of lumber has been maintained, ranging from 21 per cent in Saskatchewan and 29 per cent in Manitoba to 32 per cent in Alberta.

Prince Edward Island shows a small decrease in the quantity of its cut, amounting to 503 thousand feet. Spruce lumber shows an increase in volume of cut amounting to 504 thousand feet, balsam fir and beech also show small increases; the remaining species all show a decrease in the year's cut. The average price rose from $18.17 in 1917 to $21.64 in 1918, or approximately 20 per cent.

Tables XIV to XXXIV present detailed statistics of lumber production by kinds of wood and also by provinces for the calendar years 1917 and 1918. The commercial species in each class of lumber is appended and the provinces in which each particular species is found are given in the usual abbreviated forms. Where the abbreviation appears in brackets, the species rarely occurs or is of little commercial value in that province. The principal species of wood, which show a decline in the cut of 1918, were: spruce (323,781 thousand feet,) hemlock (50,751 thousand feet), balsam fir (18,389 thousand feet), cedar, (18,136 thousand feet), Western yellow or bull pine (10,396 thousand feet), beech (7,778 thousand feet), elm (1,829 thousand feet), poplar cottonwood (1,545 thousand feet), and red pine (635 thousand feet). All the remaining species show increases in quantity of cut, the largest being for the item of custom sawn lumber (table XXXIV), amounting to 47,816 thousand feet.

Lath production.—The production of lath by provinces is shown in table XXXV and by kinds of wood in table XXXVI. The year 1918 shows another large decrease in the cut of lath, amounting to 178,849 thousand, which may be accounted for by the decline in the building trade owing to high prices of labour and materials. The average value per thousand in the Dominion rose from $2.96 in 1917 to $3.13 in 1918. Ontario leads in the production of lath with 34 per cent of the total cut, New Brunswick holding second place with 26·8 per cent, Quebec, third, with 17·9 per cent and British Columbia, fourth, with 11·5 per cent. Classified according to kinds of wood spruce continues to hold first position with 194,295 thousand, or 44·4 per cent of the total cut, with white pine in second place with 150,455 thousand, or 34·3 per cent, the remaining species contributing but 21·3 per cent of the total cut by kinds of wood.

Shingle production.—Tables XXXVII and XXXVIII show the production of shingles, by provinces and by kinds of wood. The statistics show a decrease

in the total cut for the Dominion in 1918 of 358,435 thousand, accounted for by reasons similar to those already stated under lath production. British Columbia furnished 81·2 per cent of the total output. Quebec is second with 9·4 per cent and New Brunswick third with 6·4 per cent, the remaining provinces contributing but 3 per cent. The average value per thousand rose from $2.79 in 1917 to $3.07 in 1918, or an increase of a little more than 10 per cent. Analysed by species of wood used, cedar accounts for 88·3 per cent, white pine for 6·9 per cent, and spruce for 3·5 per cent. Of the total cut of cedar shingles, the province of British Columbia produced 2,048,738 thousand, or over 87 per cent, followed by Quebec with 6·2 per cent and New Brunswick with 4·6 per cent.

Timber lands owned.—The estimated acreage, stand and value of virgin standing timber by provinces is presented in table XXXIX. These statistics refer to land owned in fee simple. They do not include timber areas held under lease, license or concession, nor do they include vast areas of commercially valuable timber lands not taken up as such. Operators reported a total acreage of 27,118,741, with standing timber estimated at 88,281,249 thousand feet, valued at $143,240,913, as compared with 19,289,094 acres, 54,317,308 thousand feet of standing timber of the value of $122,501,539 in 1917. The average stand of timber per acre in 1918 was approximately 3·25 thousand feet, as against 2·82 thousand feet in 1917. The estimated average value of standing timber based on the 1917 returns was $2.25 per thousand, while in 1918 the value fell to $1.62 per thousand. Quebec leads all provinces both in the acreage and the stand of timber owned, Ontario is second in acreage and third in stand, New Brunswick, third in acreage and fourth in stand and British Columbia, fourth in acreage and second in stand. The remaining provinces in point of acreage follow in the order named, Nova Scotia, Manitoba, Alberta, Saskatchewan and Prince Edward Island, whilst as to the stand of timber the order was as follows: Manitoba, Nova Scotia, Alberta, Saskatchewan, and Prince Edward Island.

The acreage and value of timber on cut or burnt-over lands owned is estimated according to reports received during 1918 at 2,190,693 acres, worth $4,028,211, or an average value per thousand feet of $1.84.

Raw materials—logs, bolts, etc.

Table XL gives statistics of the materials used in the industry by provinces, classified under the following heads:—

Timber cut for logs and for bolts from own limits, logs for lumber and bolts for shingles, etc., purchased, rough lumber purchased for further manufacture, other materials including timber for poles, posts and crossties, etc., and freight charges on the materials delivered at the mill or yard.

The total cost of all materials used during the year, was $45,742,557, comprising logs for lumber to the value of $33,667,084, bolts for shingles, valued at $4,967,804, rough lumber purchased worth $1,801,224, timber for poles, ties, etc., valued at $4,327,486, and freight charges on materials delivered at the mills of $978,959. The percentage of the cost of materials to the value of products was 31·26 in 1918, as compared with 35 per cent in 1917. The difference is due to the increased price in the value of the product.

The per cent distribution of the cost of materials by provinces in 1918 follows in the order named: British Columbia, 33·92; Quebec, 27·88; Ontario, 22·54; New Brunswick, 11·58; Nova Scotia, 2·63; Saskatchewan, 0·67; Manitoba, 0·42; Alberta, 0·22; and Prince Edward Island, 0·13.

Capital Investment.

Table XLI shows the capital invested in operating mills, classified under the following heads: (1) Land, buildings, machinery and tools, in (*a*) logging and timber plants and (*b*) saw, shingle and lath mills; (2) materials, stocks in process of manufacture, finished products and miscellaneous supplies on hand; and (3) working capital including cash, trading and operating accounts and bills receivable.

The amount invested in operating mills in 1918 was $182,254,740, an increase over 1917 of $32,988,721, or approximately 22 per cent. The investment in logging and timber plants advanced from $24,102,445 in 1917 to $36,616,522 in 1918, or an increase of 50 per cent. In mills, the investment rose from $48,545,792 in 1917 to $54,225,840 in 1918, an increase of 12 per cent; materials on hand, stocks in process, etc., from $44,788,359 in 1917 to $55,059,898 in 1918, or an increase of 23 per cent, and in working capital from $31,829,423 in 1917 to $36,352,480 in 1918, or an increase of 14 per cent. A summary table of capital investment by provinces is presented below for the calendar years 1917 and 1918:

Capital Compared in 1917 and 1918.

Provinces.		Land, buildings, machinery and tools.		Materials or hand stocks in process, etc.	Cash, trading and operating accounts.	Total Capital.
		In logging plants.	In mills.			
		$	$	$	$	$
Canada	**1917**	**24,102,445**	**48,545,792**	**44,788,359**	**31,829,423**	**149,266,019**
	1918	**36,616,522**	**54,225,840**	**55,059,898**	**36,352,480**	**182,254,740**
Alberta	1917	178,307	377,833	353,580	178,335	1,088,055
	1918	74,925	184,328	153,860	55,421	468,534
British Columbia	1917	7,909,267	17,828,138	7,700,707	8,410,607	41,848,719
	1918	5,858,862	16,234,726	10,911,316	9,403,544	42,408,148
Manitoba	1917	302,515	701,306	687,803	724,543	2,416,167
	1918	134,772	828,605	719,295	898,567	2,581,239
New Brunswick	1917	2,039,279	7,286,236	6,805,338	5,052,473	21,183,328
	1918	8,058,804	4,391,957	7,283,567	5,622,527	25,356,855
Nova Scotia	1917	2,174,223	3,951,724	1,386,109	1,353,300	8,865,356
	1918	1,797,024	1,518,165	1,144,658	598,109	5,057,956
Ontario	1917	6,547,999	9,388,674	18,380,842	9,567,330	43,884,845
	1918	6,697,923	10,527,006	18,846,365	10,791,050	46,862,344
Prince Edward Island	1917	4,400	108,750	6,400	7,952	127,502
	1918	13,100	101,875	9,025	11,290	135,290
Quebec	1917	4,888,771	8,456,198	8,585,105	5,621,035	27,551,019
	1918	13,849,405	20,153,062	15,031,084	8,168,269	57,201,820
Saskatchewan	1917	57,684	446,931	882,565	913 848	2,301,028
	1918	131,707	282,235	934,922	800,245	2,149,109

Employees, Salaries and Wages.

Salaried employees.—The statistics of persons employed on salaries in the lumber industry are given in table XLII by number, class and sex for each of the provinces and the Dominion. The provinces of Alberta and Nova Scotia alone show decreases in the payments of salaries in 1918, as compared with 1917. For the Dominion the increase in the number of all employees in 1918 was 409 and in the amount paid for salaries the increase was $592,580. A comparative summary for the years 1917 and 1918 is given below, showing the number of persons employed, male and female, and the total salaries paid:—

COMPARATIVE TABLE OF SALARIES, 1917 AND 1918.

Provinces.	1917			1918		
	Employees.		Total Salaries.	Employees.		Total. Salaries.
	Male.	Female.		Male.	Female.	
	No.	No.	$	No.	No.	$
Canada	**2,874**	**285**	**4,781,300**	**3,287**	**281**	**5,373,880**
Alberta	48	1	38,070	20	1	20,760
British Columbia	762	103	1,396,213	643	104	1,406,647
Manitoba	40	1	54,440	36	5	67,759
New Brunswick	430	55	545,424	336	56	589,606
Nova Scotia	201	10	153,419	122	15	91,551
Ontario	726	72	1,460,007	912	64	1,824,903
Prince Edward Island	1	—	1,000	2	—	2,200
Quebec	627	36	1,055,379	1,175	30	1,289,593
Saskatchewan	39	7	77,348	40	6	78,461
Yukon	—	—	—	1	—	2,400

Wage-earners.—The number of employees working in the woods and in the mills and the amount paid in wages to each class is shown in table XLIII. The number of persons employed in the woods and in the mills shows increases over 1917 of 2,560 and 1,430 respectively, or a total of 3,990 in the industry for the Dominion. There was also an increase in the amount paid to labour during the year of $9,999,831, representing an advance of over 29 per cent in the total wage-bill of the industry. The following comparative table summarizes employment and wage-payments for the years 1917 and 1918 for the Dominion and the provinces:—

COMPARATIVE TABLE OF EMPLOYEES AND WAGES, 1917 AND 1918.

Provinces.	Employees, 1917.		Employees, 1918.		Increase or decrease	
	Number	Wages.	Number.	Wages.	Number.	Wages.
		$		$		$
Canada	**53,313**	**34,412,411**	**57,303**	**44,412,242**	**3,990**	**9,999,831**
Alberta	328	258,864	240	174,177	—88	—84,687
British Columbia	13,879	11,046,370	13,268	13,621,118	—611	2,574,748
Manitoba	795	470,781	911	641,338	116	170,557
New Brunswick	6,539	3,574,275	6,551	4,015,781	12	441,506
Nova Scotia	2,994	1,246,246	2,478	1,146,240	—516	— 100,006
Ontario	16,447	10,115,652	16,804	12,926,710	357	2,811,058
Prince Edward Island	67	25,856	53	28,511	—14	2,655
Quebec	10,840	6,705,704	15,711	10,740,644	4,871	4,031,940
Saskatchewan	1,424	965,663	1,282	1,113,939	—142	148,276
Yukon	—	—	5	3,784	5	3,784

The minus sign (—) denotes a decrease.

From the above it will be seen that while the provinces of British Columbia, Prince Edward Island and Saskatchewan show decreases in the number of persons employed, there was a considerable increase in the total wages paid. The provinces of Manitoba, New Brunswick, Ontario, and Quebec show increases under each head. Alberta and Nova Scotia show a decrease both in the number of employees and in the payments for wages, and the Yukon is separately reported for the first time. The province of Quebec shows the greatest increase during the year, with 4,871 in the number of persons employed and $4,031,940 in the amount of wages paid.

Employment by months.—Table XLIV presents statistics of employment by months and by classes for each of the provinces and the Dominion. The months of highest employment in the woods are from November to March, for river driving from April to June, and for mill operations from May to August. The average number engaged during the year was 26,954 in logging and transportation, an increase of 2,560 over 1917, or a little more than 10 per cent; in the mills the average number for the year was 30,349, an increase of 1,560 over 1917, or approximately 5 per cent.

Working time of employees.—The number of days in operation in saw-mills on full time, three-quarter time, half-time and the number of days idle during the year, together with the hours worked per shift and per week, is given in table XLV. British Columbia stands first in the time mills were in operation, with 210·41 days in a total of 304 days, Quebec is second with 152·56 days and Saskatchewan third with 138 days. The average for the Dominion was approximately 114 days operating and 190 days idle. The average working time per day for the Dominion was 9·4 hours and per week 56·2 hours, while the provinces show but a fractional variation from the above figures.

Fuel Consumption.

The quantity and value of the principal fuels used in the industry are shown in table XLVI for the Dominion and the provinces. Wood appears as the principal item, with 94,334 cords valued at $272,327, coal being next in order with 25,995 tons valued at $198,233, followed by fuel oil valued at $40,928, gasoline at $33,131, and other fuels, including coke, natural gas, etc., to the value of $47,887. The total value of all fuel used during the year was $592,506, as compared with $585,446 in 1917. Refuse, such as slabs, edgings and saw-dust for which no value is given, is not included in the item of fuel.

Power Employed.

Table XLVII presents statistics of power employed during the year under two heads, viz.; power owned and power rented. Under the head of power owned, steam leads with 2,516 units of 192,997 rated horse-power of which 175,639 were actually employed; water-wheels and turbines are next in order with 893 units of 41,014 rated horse-power of which 36,009 were actually employed; electric motors with 390 units of a total rated horse-power of 18,577 of which 15,805 were actually employed; gas engines with 112 units of 7,046 rated horse-power and 6,733 actually employed, and gasoline engines with 186 units of a rated horse-power of 3,601 of which 3,364 were actually employed, and 111 units of other power with a rated horse-power of 3,893 of which 3,523 were actually employed.

Rented power included 476 motors of 14,668 rated horse-power of which 11,653 were actually employed, and 23 units described as other power with a rating of 712 horse-power of which 601 were actually employed. The total cost of rented power during the year was $134,275, or $8.73 per rated horse-power, and $10.96 per horse-power for that actually employed.

Miscellaneous Expenses.

The cost of miscellaneous or overhead expenses for the year 1918 is shown in table XLVIII by provinces. Rent of offices, insurance and other miscellaneous expenses, amounting to $7,651,967, formed the largest item. Contract work cost $7,360,291; supplies for board of men and horses, $5,946,730; taxes $1,448,352; rent of mill or factory, $299,792, and rent of power, $134,275, making a total outlay for the Dominion of $22,841,407, which is an increase over the year 1917 of $4,926,239, or 27·5 per cent.

Imports and Exports.

The value of forest products imported into Canada during the calendar year 1918 amounted to $11,999,940, of which logs contributed $380,338 and all other remanufactured wood $11,619,602. Over 99·5 per cent of the imports of forest products comes from the United States.

The exports of Canadian forest products during the calendar year 1918, as shown in the trade reports, were valued at $65,372,236, comprising logs to the value of $547,351, and all other unmanufactured wood to the value of $64,824,885. Over 86 per cent of Canada's forest products is exported to the United States.

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VI—Ontario. 00
VII—Quebec. 00
VIII—New Brunswick. 00
IX—Nova Scotia. 00
X—Saskatchewan. 00
XI—Manitoba. 00
XII—Alberta. 00
XIII—Prince Edward Island. 00

(c) Cut, by kinds of wood, by provinces:

XIV—Spruce. 00
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XVI—Douglas fir. 00
XVII—Balsam fir. 00
XVIII—Hemlock. 00
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XX—Cedar. 00
XXI—Birch. 00
XXII—Red pine. 00
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VI—Ontario 00
VII—Québec 00
VIII—Nouveau-Brunswick 00
IX—Nouvelle-Ecosse 00
X—Saskatchewan 00
XI—Manitoba. 00
XII—Alberta 00
XIII—Ile du Prince-Edouard 00

(c) Sciage, par essences, dans chaque province:

XIV—Epinette 00
XV—Pin blanc 00
XVI—Sapin Douglas 00
XVII—Sapin baumier 00
XVIII—Pruche 00
XIX—Pin massif 00
XX—Cèdre 00
XXI—Bouleau 00
XXII—Pin rouge 00
XXIII—Tamarac 00
XXIV—Pin gris 00
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Table I.—Lumber cut, by provinces, 1917-18.
Tableau I.—Bois de construction scié, par provinces, 1917-1918.

Province	Number of firms reporting. — Nombre d'établissements recensés		Quantity cut, M ft. b.m. — Quantité sciée, MP. M.P.		Value of lumber. — Valeur du bois de construction		Average value per M ft. b.m. — Valeur moyenne par MP. M.P.		Per cent distribution of cut. — Pourcentage du sciage		Per cent increase or decreas in cut over— — Pourcent. de l'augm. ou de la diminu. du sciage sur—
	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918	1917
					$	$	$ c.	$ c.			
Canada	**2,879**	**3,095**	**4,151,703**	**3,886,631**	**83,655,097**	**103,700,620**	**20 15**	**26 68**	**100·0**	**100·0**	**— 6·4**
Ontario—Ontario	603	875	1,110,264	1,110,062	25,438,449	34,168,754	22 88	30 78	26·8	30·4	— *·0
Quebec—Québec	1,151	1,247	827,574	841,084	16,718,726	20,916,604	20 20	24 87	19·9	21·2	+ 1·6
New Brunswick — Nouveau-Brunswick	255	224	593,497	442,625	11,324,101	12,189,312	19 08	27 54	14·3	11·0	—25·9
Nova Scotia — Nouvelle-Ecosse	462	419	236,710	176,332	4,404,109	4,092,039	18 61	23 19	5·7	4·2	—25·5
Prince Edward Island — Ile du Prince-Edouard	60	48	6,896	6,393	125,309	136,336	18 17	21 32	0·2	0·2	— 7·3
British Columbia — Colombie Britannique	251	201	1,200,544	1,157,636	22,109,301	28,351,207	18 47	24 49	28·9	29·1	— 3·5
Saskatchewan — Saskatchewan	16	13	88,375	75,835	2,036,029	2,122,307	23 04	27 98	2·1	1·9	—14·2
Manitoba—Manitoba	29	31	54,216	54,047	962,146	1,240,052	17 75	22 94	1·3	1·4	— 0·3
Alberta—Alberta	52	36	33,627	22,388	536,927	473,694	15 97	21 16	0·8	0·6	—33·4
Yukon—Yukon	–	1	–	229	–	10,315	–	45 04	–	–	–

* Less than one-tenth of one per cent—Moins de un dixième de un pour cent.

Table II.—Lumber cut, by kinds of wood, 1917-18.
Tableau II.—Bois de construction scié, par essences, 1917-1918.

Kinds of wood — Essences	Quantity M ft. B.M. — Quantité, M.P. M.P.		Percentage of increase or decrease over— — Pourcent. différentiel sur—		Total value of lumber — Valeur totale du bois de construction		Percent distribution of total cut — Pourcentage de chaque essence		Average value per M ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918
					$				$ c.	$ c.
Total	**4,151,703**	**3,886,631**	**— 6·7**		**103,700,620**		**100·0**	**100·0**	**20 15**	**26 68**
Spruce—Epinette blanche	1,466,558	1,142,777	— 22·1		29,198,716		35·3	29·5	19 00	25 55
White pine—Pin blanc	791,592	808,652	+ 2·0		26,958,500		19·1	20·8	24 00	33 34
Douglas fir—Sapin Douglas	704,412	715,812	+ 1·6		17,347,058		16·9	18·5	17 73	24 23
Hemlock—Prucbe	324,107	273,356	— 18·7		6,753,119		7·8	6·8	19 86	24 70
Cedar—Cèdre	148,364	130,228	— 12·2		3,186,565		3·6	3·4	18 46	24 47
Red pine—Pin rouge	102,751	102,105	— 0·6		3,354,827		2·5	2·6	24 50	32 86
Balsam fir—Sapin baumier	104,957	94,774	— 9·7		2,260,196		2·5	2·4	18 83	23 85
Yellow or bull pine—Pin massif	75,102	64,737	— 13·8		1,425,447		1·8	1·7	22 98	22 02
Birch—Bouleau	60,576	76,165	+ 25·7		2,215,847		1·5	1·9	25 31	29 10
Tamarack—Tamarac	53,844	77,135	+ 43·2		1,943,269		1·3	2·0	18 22	25 19
Maple—Erable	21,105	47,884	+126·9		1,355,255		0·5	1·3	26 20	28 30
Jack pine—Pin gris	19,825	23,512	+ 18·6		638,306		0·5	0·6	21 54	27 15
Beech—Hêtre	16,102	8,321	— 48·3		218,620		0·4	0·2	19 98	26 27
Elm—Orme	15,850	19,016	+ 20·0		423,840		0·4	0·5	21 22	22 29
Basswood—Tilleul	14,790	23,965	+ 62·0		569,100		0·4	0·6	25 00	23 75
Poplar—Peuplier	9,526	13,945	+ 71·6		302,058		0·2	0·4	16 64	21 66
Ash—Frêne	6,650	7,827	+ 17·7		197,254		0·2	0·2	22 87	25 20
Oak—Chêne	1,894	3,014	+ 37·6		109,599		*	*	40 25	33 65
Yellow cypress—Cyprès	16	8,219	+17,767·0		186,566		*	0·2	15 17	22 70
Chestnut—Marronnier	276	735	+166·3		22,191		*	*	39 53	30 19
Hickory—Noyer tomenteux	168	213	+ 26·8		8,910		*	*	40 24	41 83
Butternut—Noyer cendré	121	264	+118·2		10,050		*	*	22 92	38 07
Cherry—Cerisier	51	251	+392·2		6,296		*	*	68 84	25 08
Walnut—Noyer commun	51	12	— 72·5		705		*	*	81 08	58 75
Red Alder—Aulne rouge	5	55	+1,100·0		1,087		*	*	20 00	19 80
Other kinds—Autres essences	52,348	35,209	— 34·6		753,225		1·3	0·9	18 05	22 02
Custom sawing—Sciage pour clients	160,632	208,448	+ 28·5		4,254,014		3·8	5·3	18 84	20 60

*Less than one-tenth of one per cent—Moins de un dixième de un pour cent.

Table III.—Soft vs. Hardwoods.—Total quantity and percentage each forms of the total lumber production in Canada and in each province in 1917-18.

Tableau III.—Bois durs et bois tendres.—Leurs quantités et productions respectives dans la production du bois de construction au Canada et dans chaque province, en 1917-1918.

Provinces	Softwoods—Bois tendres				Provinces	Hardwoods—Bois durs			
	Quantity M ft. B.M. — Quantité MP.. M.P.		Per cent of total — Pourcentage du total			Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent of total — Pourcentage du total	
	1917	1918	1917	1918		1917	1918	1917	1918
Total	**4,004,538**	**3,684,964**	**96·5**	**94·8**	**Total**	**147,165**	**201,667**	**3·5**	**5·2**
British Columbia	1,186,339	1,150,510	98·8	99·9	British Columbia	14,205	1,126	1·2	0·1
Ontario	1,055,828	1,033,668	95·1	93·1	Ontario	54,436	76,394	4·9	6·9
Quebec	778,307	757,260	94·0	90·0	Québec	49,267	83,824	6·0	10·0
New Brunswick	587,792	428,372	99·0	96·8	New Brunswick	5,705	14,253	1·0	3·2
Nova Scotia	215,449	154,255	91·0	86·4	Nova Scotia	21,261	22,077	9·0	13·6
Saskatchewan	88,178	75,821	99·8	100·0	Saskatchewan	197	14	0·2	*
Manitoba	53,480	51,443	98·8	95·2	Manitoba	736	2,604	1·2	4·8
Alberta	33,286	21,681	98·9	96·8	Alberta	341	707	1·1	3·2
Prince Edward Island	5,879	5,725	85·3	89·0	Prince Edward Island	1,017	668	14·7	11·0
Yukon	–	229	–	100·0		–	–	–	–

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table IV.—Softwoods vs. Hardwoods.—Comparison of quantities of each produced in Canada and percentage each forms of the total, 1917-18.

Table IV.—Bois durs et bois tendres.—Production comparative, absolue et relative des différentes essences pour l'ensemble du Canada, en 1917-1918.

Kinds of wood — Essences	Quantity M ft. b.m. — Quantité MP. M.P.		Per cent of total — Pourcentage du total		Kinds of Wood — Essences	Quantity M ft. B.M. — Quantité MP. M.P.		Per cent of total — Pourcentage du total	
	1917	1918	1917	1918		1917	1918	1917	1918
Total, all woods—Total, tous bois	**4,151,703**	**3,886,631**	**100·0**	**100·0**	**Total, all woods—Total, tous bois**	**4,151,703**	**3,886,631**	**100·0**	**100·0**
Total, softwoods—Total, bois tendres	**4,004,538**	**3,684,964**	**96·5**	**94·8**	**Total, hardwoods — Total, bois durs**	**147,165**	**201,667**	**3·5**	**5·2**
Spruce—Epinette blanche	1,466,558	1,142,777	35·3	29·4	Birch—Bouleau	60,576	76,165	1·6	2·0
White pine—Pin blanc	791,592	808,652	19·1	20·8	Maple—Erable	21,105	47,884	0·5	1·2
Douglas fir—Sapin Douglas	704,412	715,812	16·9	18·5	Basswood—Tilleul	14,790	23,965	0·4	0·6
Hemlock—Pruche	324,107	273,356	7·8	7·1	Beech—Hêtre	16,102	8,321	0·4	0·2
Cedar—Cèdre	148,364	130,228	3·6	3·4	Elm—Orme	15,850	19,016	0·4	0·5
Red pine—Pin rouge	102,751	102,105	2·5	2·6	Poplar—Peuplier	9,526	13,945	0·2	0·4
Balsam fir—Sapin baumier	104,957	94,774	2·6	2·4	Ash—Frêne	6,650	7,827	0·1	0·2
Western yellow or bullpine—Pin massif	75,102	64,737	1·8	1·6	Cherry—Merisier	51	251	*	*
Tamarack—Tamarac	53,844	77,135	1·3	2·0	Oak—Chêne	1,894	3,014	*	*
Jack pine—Pin gris	19,825	23,512	0·5	0·6	Chestnut—Marronnier	276	735	*	*
Yellow cypress—Cyprès	46	8,219	*	0·2	Butternut—Noyer cendré	121	264	*	
Other kinds including custom sawing—Autres essences, y compris sciage pour clients	212,980	243,657	5·1	6·2	All other—Tous nutres.	224	280	*	*

*Less than-tenth of one per cent—Moins de un dixième de un pour cent.

Table V.—British Columbia Lumber, by Kinds of Wood, 1917-1918.

Tableau V.—Le bois de construction en Colombie Britannique, par essences, 1917-1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**1,200,544**	**1,157,636**	**100·0**	**100·0**	**22,109,301**	**28,351,207**	**18·75**	**24·49**
Douglas fir—Sapin Douglas	704,352	714,018	58·7	61·7	12,490,192	17,299,290	17·73	24·23
Cedar—Cèdre	121,723	91,266	10·1	7·9	2,290,226	2,333,740	18·82	25·57
Spruce—Epinette blanche	95,899	109,944	7·9	9·5	1,692,657	3,044,708	17·65	27·70
Western yellow pine (Bull pine)—Pin massif	75,102	64,706	6·3	5·6	1,726,113	1,424,727	22·98	22·02
Hemlock—Pruche	53,936	55,111	4·5	4·8	1,038,986	1,338,766	19·26	24·29
Tamarack—Tamarac	45,050	69,768	3·8	6·0	811,483	1,745,788	18·01	25·02
Balsam fir—Sapin baumier	29,557	12,172	2·5	1·0	606,049	256,655	20·50	21·08
White pine—Pin blanc	20,473	6,280	1·7	0·6	418,710	161,829	20·45	25·77
Birch—Bouleau	12,365	40	1·0	*	253,355	674	20·49	16·85
Poplar (Cottonwood)—Peuplier (cotonnier)	1,825	1,060	0·2	0·1	22,925	23,766	12·56	22·42
Jack pine—Pin gris	1,721	925	0·1	0·1	31,540	19,115	18·33	20·66
Yellow cypress—Cyprès	46	7,114	*	0·6	698	163,266	15·17	22·95
Maple—Erable	10	21	*	*	200	339	20·00	16·14
Red alder—Aulne rouge	5	5	*	*	100	87	20·00	17·40
Other kinds—Autres essences	32,781	23,984	2·7	2·0	617,131	514,657	18·83	21·46
Custom sawing—Sciage, pour clients	5,699	1·222	0·5	0·1	108·936	23,800	19·12	19·48

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table VI.—Ontario Lumber, by Kinds of Wood, 1917-1918.

Tableau VI.—Le bois de construction dans Ontario, par essences, 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**1,110,264**	**1,110,062**	**100·0**	**100·0**	**25,438,449**	**34,168,754**	**22·91**	**30·78**
White pine—Pin blanc	611,726	585,342	55·1	52·7	14,870,638	20,336,855	24·31	34·74
Hemlock—Pruche	164,688	121,538	14·8	10·9	3,349,985	3,183,841	20·28	26·19
Red pine—Pin rouge	91,893	89,693	8·3	8·1	2,266,057	2,978,929	24·66	33·21
Spruce—Epinette blanche	49,477	64,127	4·5	5·8	1,167,918	1,931,947	23·61	30·13
Elm—Orme	12,646	13,780	1·1	1·2	263,688	281,083	20·85	20·39
Maple—Erable	12,574	24,351	1·1	2·2	342,922	704,743	27·27	28·94
Jack pine—Pin gris	12,227	12,026	1·1	1·7	273,436	330,261	22·12	27·87
Birch—Bouleau	10,421	10,485	0·9	0·9	293,880	349,019	28·20	33·29
Basswood—Tilleul	8,952	14,247	0·8	1·3	228,982	274,067	25·58	19·24
Cedar—Cèdre	5,770	3,230	0·5	0·3	79·232	80·705	13·73	24·98
Ash—Frêne	3,010	1,741	0·3	0·2	68,352	54,581	22·71	31·35
Tamarack—Tamarac	2,535	1,387	0·2	0·1	51,767	36,623	20·42	26·40
Beech—Hêtre	1,809	3,592	0·2	0·3	37,715	97,979	20·84	27·28
Balsam fir—Sapin baumier	2,273	2,061	0·3	0·2	45,899	48,408	20·17	23·49
Oak—Chêne	1,505	2,296	0·1	0·2	60,217	76,879	40·01	33·48
Poplar (balsam)-Peuplier (baumier)	1,309	1,385	0·1	0·1	22,282	29,009	17·02	20·94
Poplar (aspen)—Peuplier (tremble)	1,235	3,484	0·1	0·3	24,731	74,969	20·03	21·52
Poplar (cottonwood)—Peuplier (cotonnier)	641	82	*	–	12,745	1,935	19·88	23·57
Chesnut—Marronnier	240	735	*	0·1	9,633	22,191	40·14	30·19
Hickory—Noyer tomenteux	53	141	*	–	2,151	6,185	40·58	43·87
Cherry—Cerisier	20	41	*	–	1,334	1,404	66·70	34·24
Walnut—Noyer commun	10	8	*	–	805	565	80·50	70·62
Butternut—Noyer cendré	11	26	*	–	365	773	33·18	29·73
Other kinds—Autres essences	6,843	2,550	0·6	0·2	67,124	57,946	9·81	22·72
Custom sawing—Sciage, pour clients	108,298	144,714	9·8	13·0	1,901,681	3,007,827	17·54	20·78

*Less than one tenth of one per cent.—Moins de un dixième de un pour cent.

Table VII.—Quebec Lumber, by Kinds of Wood, 1917 and 1918.

Tableau VII.—Le bois de construction dans Québec, par essences, en 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts
Total	**827,574**	**841,084**	**100·0**	**100·0**	**16,718,726**	**20,916,604**	**20·21**	**24·87**
Spruce—Epinette blanche	548,159	459,091	66·3	54·6	10,528,751	10,896,168	19·21	23·73
White pine—Pin blanc	108,308	137,282	13·1	16·3	2,559,872	4,092,780	23·64	29·16
Hemlock—Pruche	45,281	51,820	5·5	6·2	917,169	1,198,754	20·21	23·13
Balsam fir—Sapin baumier	30,097	34,616	3·6	4·1	551,541	771,100	18·32	22·28
Birch—Bouleau	26,839	39,833	3·2	4·7	721,209	1,170,442	26·85	29·38
Cedar—Cèdre	11,549	19,227	1·4	2·3	219,135	419,477	18,97	21·86
Maple—Erable	7,389	18,889	0·9	2·2	182,316	537,391	24·68	28·45
Basswood—Tilleul	4,453	9,542	0·5	1·1	111,544	290,025	25·04	30·39
Tamarack—Tamarac	3,733	4,002	0·5	0·5	70,968	101,904	19·01	25·46
Ash—Frêne	3,444	6,084	0·4	0·7	79,426	142,628	23·06	23·44
Red pine—Pin rouge	3,422	10,514	0·4	1·2	87,704	325,430	25·63	30·95
Poplar (aspen)—Peuplier (tremble)	2,781	1,836	0·3	0·2	47,492	39,413	17·08	21·47
Elm—Orme	2,179	5,204	0·5	0·6	47,129	141,986	21·63	27·28
Beech—Hêtre	1,194	1,126	0·1	0·1	22,528	29,398	18·87	26·11
Jack pine—Pin gris	2,849	2,272	0·3	0·3	58,892	61,712	19·52	27·16
Poplar (balsam)-Peuplier (baumier)	462	443	0·1	0·1	7·072	12,413	15·31	28·02
Oak—Chêne	173	310	*	*	7,585	10,813	43·84	34·88
Hickory—Noyer tomenteux	115	72	*	*	4,610	2,725	40·08	37·85
Butternut—Noyer cendré	109	238	*	*	2,393	9,277	21·95	38,94
Walnut—Noyer commun	41	4	*	*	3,330	140	81·22	35·00
Chestnut—Marronnier	36	–	*	*	1,278	–	35·50	–
Cherry—Cerisier	31	210	*	*	2,177	4,892	70·23	23·29
Poplar (cottonwood)—Peuplier (cotonnier)	21	33	*	*	335	665	15·95	20·15
Other kinds—Autres essences	9,266	9,516	1·1	1·1	192,924	202,483	20·82	21·28
Custom sawing—Sciage, pour clients	15,545	28,920	1·9	3·4	291,346	544,588	18·75	18·83

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table VIII.—New Brunswick Lumber, by Kinds of Wood, 1917 and 1918.

Tableau VIII.—Le bois de construction au Nouveau-Brunswick, par essences, en 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**593,437**	**442,625**	**100·0**	**100·0**	**11,324,101**	**12,189,312**	**19·08**	**27·54**
Spruce—Epinette blanche	457,746	268,150	77·1	60·6	8,518,085	7,409,857	18·61	27·63
White pine—Pin blanc	38,161	70,349	6·4	15·8	865,690	2,195,303	22·69	31·20
Balsam fir—Sapin baumier	36,707	38,689	6·2	8·7	665,015	1,031,611	18·12	26·66
Hemlock—Pruche	29,192	19,162	4·9	4·3	533,895	437,798	18·29	22·85
Cedar—Cèdre	9,258	16,457	1·6	3·7	148,619	351,483	16·05	21·36
Red pine—Pin rouge	5,555	998	0·9	0·2	121,026	25,321	21·79	25·37
Birch—Bouleau	4,100	13,409	0·7	3·0	108,469	403,548	26·46	30·09
Basswood—Tilleul	1,076	129	0·2	*	21,880	4,092	20·33	31·72
Tamarack—Tamarac	806	1,621	0·1	0·4	13,880	51,724	17·22	31·91
Maple—Erable	291	587	0·1	0·1	6,120	10,932	21·03	18·62
Jack pine—Pin gris	277	151	0,1	*	4,304	3,936	15·54	25·07
Poplar (aspen)—Peuplier (tremble)	127	51	*	*	2,179	1,082	17·15	21·22
Elm—Orme	49	10	*	*	1,162	270	23·71	27·00
Beech—Hêtre	48	60	*	*	965	1,410	20·10	23·50
Ash—Frêne	13	–	*	–	243	–	18·69	–
Oak—Chêne	1	–	*	–	40	–	40·00	–
Poplar (cottonwood)—Peuplier (cotonnier)	–	–	–	–	–	–	–	–
Cherry—Cerisier	–	–	–	–	–	–	–	–
Poplar balsam)-Peuplier (baumier)	–	7	–	*	–	120	–	17·14
Butternut—Noyer cendré	–	–	–	–	–	–	–	–
Other kinds—Autres essences	1,660	1,837	0·3	0·4	32,500	45,780	19·58	24·92
Custom sawing—Sciage, pour clients	8,430	10,952	1·4	2·5	280,029	215,045	33·22	19·93

*Less than one-tenth of one per cent—Moins de un dixième de un pour cent.

Table IX.—Nova Scotia Lumber, by Kinds of Wood, 1917 and 1918.

Tableau IX.—Le bois de construction en Nouvelle-Ecosse, par essences, 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**236,710**	**176,332**	**100·0**	**100·0**	**4,404,109**	**4,092,039**	**18·61**	**23·21**
Spruce—Epinette blanche	142,695	93,467	60·3	53·1	2,494,977	2,163,495	17,48	23·15
Hemlock—Pruche	30,611	25,528	12·9	14·5	601,702	589.95a	19·66	23·11
Beech—Hêtre	12,958	3,362	5·5	1·9	258,726	85,429	19·97	25·41
White pine—Pin blanc	12,467	9,379	5·3	5·3	273,563	261,153	21·95	27·74
Birch—Bouleau	6,303	12,047	2·7	6·8	144,562	282,881	22·94	23·48
Balsam fir—Sapin baumier	4,664	5,122	2·0	2·9	84,048	110,718	18·02	21·62
Red pine—Pin rouge	1,878	445	0·8	0·2	33,329	11,363	17·75	25·54
Tamarack—Tamarac	1,221	26	0·5	*	23,336	515	19·11	19·81
Elm—Orme	885	2	0·4	*	22,501	38	25·42	19·00
Maple—Erable	507	3,902	0·2	2·2	16,334	88,490	28·81	25·24
Jack pine—Pin gris	471	60	0·2	*	13,.30	1,200	29·36	20·00
Oak—Chêne	185	408	0·1	0·2	7,100	21,907	38·37	53·70
Ash—Frêne	155	2	0·1	*	3,626	45	23·39	22·50
Poplar (cotonwood)—Peuplier (cotonnier)	100	–	*	–	2,000	–	20·00	–
Basswood—Tilleul	87	47	*	*	2,008	916	23·08	19·50
Poplar (aspen)—Peuplier (tremble)	20	55	*	*	358	1,295	17·90	23·54
Butternut—Noyer cendré	1	–	*	–	15	–	15·00	–
Poplar (balsam)-Peuplier (baumier)	–	2,202	–	1·3	–	44,840	–	20·36
Other kinds—Autres essences	1,463	766	0·6	0·4	29,098	19,266	19·89	25·15
Custom sawing—Sciage, pour clients	19,979	19,512	8·4	11·1	392,966	398,534	19·67	20·94

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table X.—Saskatchewan Lumber, by Kinds of Wood, 1917 and 1918.

Tableau X.—Le bois de construction en Saskatchewan, par essences, 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**88,375**	**75,835**	**100·0**	**100·0**	**2,036,029**	**2,122,307**	**23·04**	**27·98**
Spruce—Epinette blanche	88,153	75,501	99·8	99·6	2,031,669	2,115,694	23·05	28·02
Poplar (aspen)—Peuplier (tremble)	194	14	0·2	*	3,810	218	19·64	15·57
Poplar (cottonwood)—Peuplier (cotonnier)	3	–	*	*	50	–	16·67	–
Tamarack—Tamarac	–	–	*	*	–	–	–	–
Jack pine—Pin gris	–	–	*	*	–	–	–	–
Custom sawing—Sciage, pour clients	25	320	*	0·4	500	6,395	20·00	20·00

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XI.—Manitoba Lumber, by Kinds of Wood, 1917 and 1918.

Tableau XI.—Le bois de construction au Manitoba, par essences, en 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**54,216**	**54,047**	**100·0**	**100·0**	**962,116**	**1,210,052**	**17·75**	**22·94**
Spruce—Epinette blanche	52,584	50,220	96·9	92·9	928,350	1,154,847	17.65	22·99
Poplar (aspen)—Peuplier (tremble)	340	528	0·6	1·0	4,946	10,915	14·55	20·67
Tamarack—Tamarac	280	241	0·5	0·4	5,280	5,770	18·86	23·94
White pine—Pin blanc	160	–	0·3	–	4,750	–	29·69	–
Basswood—Tilleul	120	–	0·2	–	3,360	–	28·00	–
Poplar (balsam)-Peuplier (baumier)	108	2,070	0·2	3·8	2,140	48,880	19·81	23·61
Jack pine—Pin gris	92	86	0·2	0·1	1,460	1,560	15·87	18·14
Elm—Orme	80	–	0·2	–	2,400	–	30·00	–
Oak—Chêne	30	–	0·1	–	1,300	–	43·33	–
Ash—Frêne	28	–	0·1	–	450	–	16·07	–
Maple—Erable	20	–	*	–	900	–	45·00	–
Birch—Bouleau	10	6	*	*	300	160	30·00	26·66
Balsam fir—Sapin baumier	10	400	*	0·7	220	8·000	22·00	20·00
Poplar (cottonwood)—Peuplier (cotonnier)	–	–	–	–	–	–	–	–
Cdar—Cèdre	–	–	–	–	–	–	–	–
Other kinds—Autres essences	260	–	0·5	–	4,720	–	22·00	–
Custom sawing—Sciage, pour clients	94	496	0·2	0·9	1,570	9·920	16·70	20·00

*Less than one-tenth of one per cent—Moins de un dixième de un pour cent.

Table XII.—Alberta Lumber, by Kinds of Wood, 1917 and 1918.

Tableau XII.—Le bois de construction en Alberta, par essences, 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**33,627**	**22,388**	**100·0**	**100·0**	**536,927**	**473,694**	**15·97**	**21·11**
Spruce—Epinette blanche	30,141	19,800	89·6	88·4	477,254	423,174	15·82	21·37
Jack pine—Pin gris	1,911	986	5·7	4·4	33,103	20,522	17·32	21·84
Poplar (cottonwood)—Peuplier (cotonnier)	242	192	0·7	0·9	3,647	3,790	15·07	19·74
Tamarack—Tamarac	215	90	0·6	0·4	4,175	945	19·42	10·50
Poplar (aspen)—Peuplier (tremble)	68	452	0·2	2·0	995	7·733	14·63	17·11
Douglas fir—Sapin Douglas	60	–	0·2	–	1,066	–	17·77	–
Poplar (balsam)-Peuplier (baumier)	31	50	0·1	0·2	465	1,000	15·00	20·00
Birch—Bouleau	–	–	–	–	–	–	–	–
Other kinds—Autres essences	75	14	0·2	*	1,400	450	18·67	32·14
Custom sawing—Sciage, pour clients	884	804	2·6	3·6	14,822	16,080	16·77	20·00

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XIII.—Prince Edward Island Lumber, by Kinds of Wood, 1917 and 1918.

Tableau XIII.—Le bois de construction dans l'Ile du Prince-Edouard, par essences, 1917 et 1918.

Kinds of Wood—Essences	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**6,896**	**6,393**	**100·0**	**100·0**	**125,309**	**136,338**	**18·17**	**21·64**
Spruce—Epinette blanche	1,704	2,248	24·7	35·2	30,882	48,511	18·12	21·57
Balsam fir—Sapin baumier	1,651	1,714	23·9	26·8	24,108	33,704	14·60	19·66
Birch—Bouleau	538	345	7·8	5·4	11,448	9·123	21·28	26·04
Hemlock—Pruche	299	197	4·3	3·1	5,443	4,006	18·20	20·34
White pine—Pin blanc	299	20	4·3	0·3	4,175	550	13·96	27·50
Jack pine—Pin gris	277	–	4·0	–	5,540	–	20·00	–
Maple—Erable	254	129	3·7	2·0	4,172	3,160	16·43	24·49
Basswood—Tilleul	102	–	1·5	–	1,990	–	19·50	–
Beech—Hêtre	93	173	1·4	2·9	1,825	4,164	19·62	24·05
Cedar—Cèdre	64	5	0·9	0·1	1,075	200	16·80	40·00
Poplar (balsam)-Peuplier (baumier)	15	–	0·2	–	235	–	15·66	–
Elm—Orme	11	20	0·2	0·3	212	463	19·27	23·15
Poplar (aspen)—Peuplier (tremble)	4	1	0·1	*	75	15	18·75	15·00
Tamarack—Tamarac	4	–	0·1	–	81	–	20·25	–
Red pine—Pin rouge	3	8	*	0·1	65	240	21·66	30·06
Poplar (cottonwood)—Peuplier (cotonnier)	–	–	–	–	–	–	–	–
Other kinds—Autres essences	–	25	–	0·4	–	375	–	15·00
Custom sawing—Sciage, pour clients	1,578	1,508	22·9	23·3	33,983	31,825	21·54	21·10

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XIV.—Spruce Lumber, by Provinces, 1917 and 1918.

Tableau XIV.—L'épinette comme bois de construction, par provinces, 1917 et 1918.

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917 $	1918 $	1917 $ cts	1918 $ cts.
Total	**1,466,558**	**1,112,777**	**100·0**	**100·0**	**27,870,543**	**29,198,716**	**19·00**	**25·55**
Quebec	548,159	459,091	37·4	40·2	10,528,751	10,896,168	19·21	23·73
New Brunswick	457,746	268,150	31·2	23·5	8,518,085	7,409,857	18·61	27·64
Nova Scotia	142,695	93,467	9·7	8·1	2,494,977	2,163,495	17·48	23·15
British Columbia	95,899	109,944	6·5	9·7	1,692,657	3,044,708	17·65	27·70
Saskatchewan	88,153	75,501	6·0	6·6	2,031,669	2,115,694	23·05	28·02
Manitoba	52,584	50,220	3·6	4·4	928,350	1,154,847	17·65	23·00
Ontario	49,477	64,127	3·4	5·5	1,167,918	1,931,947	23·61	30·13
Alberta	30,141	19,800	2·1	1·7	477,254	423,174	15·83	21·38
Prince Edward Island	1,704	2,248	0·1	0·2	30,882	48,511	18·12	21·57
Yukon	–	229	–	–	–	10,315	–	45·04

Commercial species included:—
White spruce (Picea canadensis)—All provinces.
Red spruce (Picea rubra)—P.E.I., N.S., N.B., Que., (Ont.).
Black spruce (Picea mariana)—All provinces.
Engelman Spruce (Picea Engelmanni)—B.C., Alta.
Sitka spruce (Picea sitchensis)—B.C.

Dans le commerce on comprend sous ce nom:
L'épinette blanche (Picea canadensis)—Toutes les provinces.
L'épinette rouge (Picea rubra)—I.P.-E., N.-E., N.-B., Que. (Ont.).
L'épinette noire (Picea mariaaa)—Touts les provinces.
L'épinette Engelman (Picea Engelmanni)—C.B., Alta.
L'épinette Sitka (Picea Sitchensis)—C.-B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XV.—White Pine Lumber, by Provinces, 1917 and 1918.

Tableau XV.—Le pin blanc comme bois de construction, par provinces, 1917 et 1918.

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**791,592**	**808,652**	**100·0**	**100·0**	**18,997,428**	**26,958,500**	**23·99**	**33·34**
Ontario	611,726	585,342	77·3	72·4	14,870,638	20,336,885	24·31	34·74
Quebec	108,306	137,282	13·7	17·0	2,559,872	4,002,780	23·64	29·16
New Brunswick	38,161	70,349	4·8	8·7	865,690	2,195,303	22·69	31·06
British Columbia	20,473	6,280	2·6	0·8	418,710	161,829	20·45	25·77
Nova Scotia	12,467	9,379	1·6	1·1	273,593	261,153	21·94	27·84
Prince Edward Island	299	20	*	*	4,175	550	13·96	27·50
Manitoba	160	–	*	–	4,750	–	29·69	–

Commercial species included:—
White pine (Pinus strobus)—P.E.I., N.S., N.B., Que., Ont., (Man.).
Western white pine (Pinus monticola)—B.C.

Dans le commerce on comprend sous ce nom:
Le pin blanc (Pinus strobus)—I.P.-E., N.-E., N.-B., Qué., Ont., (Man.).
Le pin blanc de l'ouest (Pinus monticola)—C.B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XVI.—Douglas Fir Lumber, by Provinces, 1917 and 1918.

Tableau XVI.—Le sapin Douglas, comme bois de construction, par provinces, 1917 et 1918

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917 $	1918 $	1917 $ cts	1918 $ cts.
Total	**704,112**	**714,018**	**100·0**	**100·0**	**12,491,258**	**17,299,290**	**17·73**	**24·23**
British Columbia	704,352	714,018	100·0	99·9	12,490,192	17,299,290	17·73	24·23
Alberta	60	–	*	–	1,066	–	17·77	–

Commercial species included:—
Douglas fir (Pseudotsuga mucronata)—B.C., (Alta.).

Dans le commerce, ce nom appartient au:
Sapin Douglas (Pseudotsuga mucronata)—C.B. (Alb.)

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XVII.—Balsam Fir Lumber, by Provinces, 1917 and 1918.

Tableau XVII.—Le sapin baumier, comme bois de construction, par provinces, 1917 et 1918.

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917 0	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**104,957**	**96,568**	**100·0**	**100·0**	**1,976,790**	**2,307,964**	**18·83**	**23·90**
New Brunswick	36,707	38,689	34·9	40·0	665,015	1,031,611	18·11	26·66
Quebec	30,097	35,820	28·7	37·1	551,541	804,835	18·32	22·46
British Columbia	29,557	12,172	28·2	12·6	606,049	256,655	20·50	21·08
Nova Scotia	4,664	5,152	4·4	5·4	84,048	111,518	18·02	21·64
Ontario	2,271	2,621	2·2	2·7	45,809	61,641	20·17	23·52
Prince Edward Island	1,651	1,714	1·6	1·8	24,108	33,704	14·60	19·66
Manitoba	10	400	*	0·4	220	8,000	22·00	20·00

Commercial species included:—
Balsam fir (Abies balsamea)—All provinces but B.C.

Mountain fir (Abies lasiocarpa)—B.C., Alta.
Amabilis fir (Abies amabilis)—Coast region of B.C.
Lowland fir (Abies grandis)—Coast region of B.C.

Dans le commerce, on comprend sous ce nom:
Le sapin baumier (Abies balsamea)—Toutes les provinces sauf C.B.
Le sapin des Alpes (Abies lasiocarpa)—C.B., Alb.
Le sapin Amabilis (Abies amabilis)—Littoral, C.B.
Le sapin des plaines (Abies grandis)—Littoral C.B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XVIII.—Hemlock Lumber, by Provinces, 1917 and 1918.

Tableau XVIII.—La pruche, comme bois de construction, par provinces, 1917 et 1918.

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**321,107**	**273,356**	**100·0**	**100·0**	**6,437,180**	**6,753,119**	**19·86**	**24·70**
Ontario	164,688	121,538	50·0	44·5	3,339,985	3,183,841	20·28	26·11
British Columbia	53,936	55,111	16·6	20·1	1,038,986	1,338,766	19·26	24·29
Quebec	45,381	51,820	14·0	18·9	917,169	1,198,754	20·21	23·13
New Brunswick	29,192	19,162	9·0	7·0	533,895	437,798	18·29	22·33
Nova Scotia	30,611	25·528	9·4	9·4	601,702	589,954	19,66	23·11
Prince Edward Island	299	197	0·1	0·1	5,443	4,006	18·20	20·34

Commercial species included:—
Eastern hemlock (Tsuga canadensis)—P.E.I., N.S., Que., Ont.
Western hemlock (Tsuga heterophylla)—B.C.

Dans le commerce, on comprend sous ce nom :
La pruche de l'est (Tsuga canndensis)—I. P. E., N.-E. Qué., Ont.
La pruche de l'ouest (Tsuga heterophylla)—C.B.

Table XIX.—Western Yellow or Bull Pine Lumber, by Provinces, 1917 and 1918.

Tableau XIX.—Le pin massif comme bois de construction, par provinces, 1917 et 1918.

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**75,102**	**64,706**	**100·0**	**100·0**	**1,726,113**	**1,424,727**	**22·97**	**22·02**
British Columbia	75,102	64,706	100·0	100·0	1,726,113	1,424,727	22·97	22·02

Commercial species included:—
Western yellow or bull pine (Pinus ponderosa)—B.C.

Commercialement ce nom comporte :
Le pin massif (Pinus ponderosa)—C.B.

Table XX.—Cedar Lumber, by Provinces, 1917 and 1918.

Tableau XX.—Le cèdre comme bois de construction, par provinces, 1917 et 1918.

Province	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**148,364**	**130,228**	**100·0**	**100·0**	**2,738,287**	**3,186,565**	**18·46**	**24·47**
British Columbia	121,723	91,266	82·0	70·1	2,290,226	2,333,740	18·81	25·57
Quebec	11,549	19,227	7·8	14·8	219,135	419,477	18·97	21·40
New Brunswick	9,258	16,457	6·2	12·6	148,619	351,483	16·05	21·36
Ontario	5,770	3,230	3·9	2·5	79,232	80,705	13·73	25·00
Prince Edward Island	64	5	*	*	1,075	200	16·80	40·00
Manitoba	–	–	–	–	–	–	–	–
Nova Scotia	–	43	–	*	–	960	–	22·32

Commercial species included:—
White cedar (Thuja occidentalis)—P.E.I., N.S., N.B., Que., Ont., (Man.).
Western red cedar (Thuja plicata)—B.C.

Dans le commerce, on comprend sous ce nom :
Le cèdre blanc (Thuja occidentalis)—I. P.-E., N.-E., N.-B., Qué., Ont., (Man.)
Le cèdre géant (Thuja plicata)—C.B.

*Less than one-tenth of one per cent—Moins de un dixième de un pour cent.

Table XXI.—Birch Lumber, by Provinces, 1917 and 1918.

Tableau XXI.—Le bouleau comme bois de construction, par provinces, en 1917 et 1918.

Provinces.	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**60,576**	**76,173**	**100·0**	**100·0**	**1,533,223**	**2,216,087**	**25·31**	**29·09**
Quebec	26,839	39,833	44·3	52·3	721,209	1,170,442	26·87	29·40
British Columbia	12,365	40	20·4	*	253,355	674	20·49	16·85
Ontario	10,421	10,485	17·2	13·8	293,880	349,019	28·20	33·28
Nova Scotia	6,303	12,047	10·4	15·8	144,562	282,881	22·93	23·49
New Brunswick	4,100	13,409	6·8	17·6	108,469	403,548	26·46	30·09
Prince Edward Island	538	345	0·9	0·5	11,448	9,123	21·28	26·44
Manitoba	10	6	*	*	300	160	30·00	26·66
Alberta	–	8	–	*	–	240	–	30·00

Commercial species included:—
Yellow birch (Betula lutea)—P.E.I., N.S., N.B., Que., Ont.
Sweet birch (Betula lenta)—N.S., N.B., Que., Ont.
Paper birch (Betula alba var. papyrifera)—All provinces.
Western birch (Betula occidentalis)—B.C.

Dans le commerce, ce nom embrasse les variétés suivantes:
Le bouleau jaune (Betula lutea)—I.P.-E., N.-E., N.-B., Qué., Ont.
Le bouleau tendre (Betula lenta)—N.-E., N.-B., Qué., Ont.
Le bouleau papyrus (Betula alba var. papyrifera)—Toutes les provinces.
Le bouleau de l'ouest (Betula occidentalis)—C.B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXII.—Red Pine Lumber, by Provinces, 1917 and 1918.

Tableau XXII.—Le pin rouge comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**102,751**	**102,116**	**100·0**	**100·0**	**2,508,181**	**3,355,017**	**24·41**	**32·85**
Ontario	91,893	89,693	89·5	87·9	2,266,057	2,978,929	24·66	33·21
New Brunswick	5,555	998	5·4	0·9	121,026	25,321	21·79	25·37
Quebec	3,422	10,525	3·3	10·3	87,704	325,650	25·63	30·95
Nova Scotia	1,878	445	1·8	0·4	33,329	11,363	17·75	25·53
Prince Edward Island	3	8	*	*	65	240	21·67	30·00
British Columbia	–	447	–	0·4	–	13,544	–	30·30

Commercial species included:—
Red or Norway pine (Pinus resinosa)—P.E.I., N.S., N.B., Que., Ont., (Man.).

Dans le commerce, ce nom appartient au
Pin rouge ou de Norvège (Pinus resinosa)—I.P.E., N.E., N.-B., Qué., Ont., Man.)

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXIII.—Tamarack Lumber, by Provinces, 1917 and 1918.

Tableau XXIII.—Le tamarac[1] comme bois de construction, par provinces, 1917 et 1918.

Provinces.	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**53,844**	**77,135**	**100·0**	**100·0**	**980,970**	**1,943,263**	**18·22**	**25·19**
British Columbia	45,050	69,768	83·7	90·5	811,483	1,745,788	18·01	25·02
Quebec	3,733	4,002	6·9	5·2	70,968	101,904	19·01	25·46
Ontario	2,535	1,387	4·7	1·8	51,767	36,623	20·42	26·40
Nova Scotia	1,221	26	2·3	*	23,336	515	19·11	19·81
New Brunswick	806	1,621	1·5	2·1	13,880	51,724	17·22	31·91
Manitoba	280	241	0·5	0·3	5,280	5,770	18·85	23·94
Alberta	215	90	0·4	0·1	4,175	945	19·42	10·50
Prince Edward Island	4	–	*	–	81	–	20·25	–

Commercial species included:—
Tamarack (Larix laricina)—All provinces.
Western larch (Larix occidentalis)—B.C.

Commercialement ce nom comprend:
Le tamarac[1] (Larix laricina)—Toutes provinces.
Le mélèze de l'ouest (Larix occidentalis)—C.B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.
[1]Connu en France sous le nom de mélèze.

Table XXIV.—Jack Pine Lumber, by Provinces, 1917 and 1918.

Tableau XXIV.—Le pin gris comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**19,825**	**23,532**	**100·0**	**100·0**	**427,105**	**638,806**	**21 54**	**27·15**
Ontario	12,227	19,026	61·6	80·9	278,436	530,261	22·77	27 87
Alberta	1,911	986	9·6	4·2	33,103	20,522	17·32	20· 1
British Columbia	1,721	925	8·7	3·9	31,540	19,115	18·33	20·67
Quebec	2,849	2,292	14·4	9·6	58,892	62,112	20·66	27 16
Nova Scotia	471	60	2·4	0·3	13,830	1,200	29·36	20 00
New Brunswick	277	157	1·4	0·7	4,304	3,956	15·54	25 19
Prince Edward Island	277	–	1·4	–	5,540	–	20·00	–
Manitoba	92	86	0·5	0·4	1,460	1,560	15·87	18·14

Commercial species included:—
Jack pine (Pinus banksiana)—All provinces east of B.C.
Lodgepole pine (Pinus murrayana)—Alta., B.C.

Dans le commerce, on comprend sous ce nom :
Le pin gris (Pinus banksiana)—Toutes les provinces à l'est de la C.B.
Le pin lodgepole (Pinus murrayana)—Alta, C.B.

Table XXV.—Maple Lumber, by Provinces, 1917 and 1918.

Tableau XXV.—L'érable comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**21,105**	**47,884**	**100·0**	**100·0**	**532,961**	**1,355,255**	**26·20**	**28·30**
Ontario	12,574	24,351	59·6	50·8	342,922	704,743	27·27	28·94
Quebec	7,389	18,889	35·0	39·5	182,316	537,391	24·67	28·45
Nova Scotia	567	3,902	2·7	8·1	16,334	98,490	28·81	25·24
New Brunswick	291	587	1·4	1·2	6,120	10,932	21·03	18·62
Prince Edward Island	254	129	1·2	0·3	4,172	3,160	16·43	24·64
Manitoba	20	–	0·1	–	900	–	45·00	–
British Columbia	10	21	*	*	200	339	20·00	16·14
Alberta	–	5	–	*	–	200	–	40·00

Commercial species included:—
Sugar maple (Acer saccharum)—P.E.I., N.S., N.B., Que., Ont.
Silver maple (Acer saccharinum)—P.E.I., N.S., N.B., Que., Ont.
Red maple (Acer rubrum)—P.E.I., N.S., N.B., Que., Ont.
Broad leaved maple (Acer macrophyllum)—B.C.

Dans le commerce, ce nom comprend:
L'érable à sucre (Acer saccharum)—I. P.-E., N.-E., N.-B., Qué., Ont.
L'érable argenté (Acer saccharinum)—I. P.-E., N.-E., N.-B., Qué , Ont.
L'érable rouge (Acer rubrum)—I. P.-E., N.-E., N.-B., Qué., Ont.
L'érable à larges feuilles (Acer macrophyllum)—C.B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXVI.—Basswood Lumber, by Provinces, 1917 and 1918.

Tableau XXVI.—Le tilleul comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts	$ cts.
Total	**11,790**	**18,111**	**100·0**	**100·0**	**369,764**	**569,100**	**25·00**	**31·42**
Ontario	8,952	8,393	60·5	46·3	228,982	274,067	25·58	32·67
Quebec	4,453	9,542	30·1	52·7	111,544	290,025	25·05	30·39
New Brunswick	1,076	129	7·3	0·7	21,880	4,092	20·33	31·72
Manitoba	120	–	0·8	–	3,360	–	28·00	–
Prince Edward Island	102	–	0·7	–	1,990	–	19·51	–
Nova Scotia	87	47	0·6	0·3	2,008	916	23·08	19·50

Commercial species included:—
Basswood (Tilia americana)—P.E.I., N.S., N.B., Que., Ont.

Dans le commerce, ce nom est réservé au:
Tilleul (Tilia americana)—I. P.-E., N.-E., N.-B., Qué. Ont.

Table XXVII.—Elm Lumber, by Provinces, 1917 and 1918.

Tableau XXVII.—L'orme comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**15,850**	**14 021**	**100·0**	**100·0**	**337,092**	**423,840**	**21·27**	**30·24**
Ontario	12,646	8,785	79·8	62·6	263,688	281,083	20·85	32·00
Quebec	2,179	5,204	13·7	37·1	47,129	141,986	21·63	27·28
Nova Scotia	885	2	5·6	*	22,501	38	25·42	19·00
Manitoba	80	–	0 5	–	2,400	–	30·00	–
New Brunswick	49	10	0·3	*	1,162	270	23·71	27·00
Prince Edward Island	11	20	0·1	0·1	212	463	19·27	23·15

Commercial species included:—
White elm (Ulmus americana)—P.E.I., N.S., N.B., Que., Ont., (Man., Sask.).
Rock elm (Ulmus racemosa)—Que., Ont.
Red elm (Ulmus fulva)—Que., Ont.

Dans le commerce, ce nom embrasse:
L'orme blanc (Ulmus americana)—I. P.-E., N.-E., N.-B., Qué., Ont. (Man., Sask.)
L'orme des rochers (Ulmus racemosa)—Qué., Ont.
L'orme rouge (Ulmus fulva)—Qué., Ont.

*Less than one tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXVIII.—All Poplar Lumber, by Provinces, 1917 and 1918.

Tableau XXVIII.—Le peuplier comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M. ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M. ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**9,526**	**13,945**	**100·0**	**100·0**	**158,182**	**302,058**	**16·61**	**21·66**
Quebec	3,264	2,312	34·3	16·6	54,899	52,491	16·82	22·70
Ontario	3,185	4,951	33·4	35·5	59,758	105,913	18·76	21·39
British Columbia	1,825	1,060	19·1	7·5	22,925	23,766	12·56	22·42
Manitoba	448	2,598	4·7	18·7	7,086	59,795	15·82	23·01
Alberta	341	694	3·6	4·9	5,107	12,523	14·98	18·05
Saskatchewan	197	14	2·1	0·1	3,860	218	19·59	15·57
New Brunswick	127	58	1·3	0·4	2,179	1,202	17·16	20·72
Nova Scotia	120	2,257	1·3	16·2	2,358	46,135	19·65	20·44
Prince Edward Island	19	1	0·2	*	310	15	16·31	15·00

Commercial species included:—
Aspen (Populus tremuloides)—All provinces.
Balsam poplar (Populus balsamifera)—All provinces.
Cottonwood (Populus deltoides et al. sp.)—Que., Ont. (Man., Sask., Alta.).
Cottonwood black (Populus trichocarpa)—B.C.

Dans le commerce, ce nom embrasse:
Le peuplier tremble (Populus tremuloides)—Toutes les provinces.
Le peuplier baumier (Populus balsamifera)—Toutes les provinces.
Le peuplier cotonnier (Populus deltoides et al. sp.)—Qué., Ont. (Man., Sask., Alb.)
Le peuplier tomenteux (Populus trichocarpa)—C. B.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXVIIIa.—Poplar (Cottonwood) Lumber, by Provinces, 1917 and 1918.

Tableau XXVIIIa.—Le peuplier (cotonnier) comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value Per M ft. B.M. — Valeur moyenne Par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$ cts.	$ cts.	$ cts.
Total	**2,832**	**1,287**	**100·0**	**100·0**	**41,703**	**28,956**	**14·73**	**22·50**
British Columbia	1,825	983	64·5	76·1	22,925	22,566	12·56	23·03
Ontario	641	82	22·6	6,4	12,745	1,935	19·88	23·60
Alberta	242	192	8·6	14·9	3,64	3,790	15·07	19·74
Nova Scotia	100	–	3·5	–	2,000	–	20·00	–
Quebec	21	33	0·7	2·6	335	665	15·95	20·15
Saskatchewan	3	–	0·1	–	50	–	16·67	–

Table XXVIIIb.—Poplar (Aspen) Lumber by Provinces, 1917 and 1918.

Tableau XXVIIIb.—Le peuplier (tremble) comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M ft. B.M. — Valeur moyenne par M P. M.P.	
	1917	1918	1917	1918	1917 $	1918 $	1917 $ cts.	1918 $ cts.
Total	**4,769**	**6,501**	**100·0**	**100·0**	**81,586**	**136,810**	**17·73**	**21·05**
Quebec	2,781	1,836	58·3	28·2	47,402	39,413	17·07	21·47
Ontario	1,235	3,484	25·9	53·6	24,731	74,969	20·02	21·52
Manitoba	340	528	7·1	8·1	4,946	10,915	14·55	21·05
Saskatchewan	194	14	4·1	0·2	3,810	218	19·64	15·54
New Brunswick	127	51	2·7	0·8	2,179	1,082	17·16	21·21
Alberta	68	452	1·4	6·9	995	7,733	14·63	17·11
Nova Scotia	20	55	0·4	0·9	358	1,205	17·90	23·55
Prince Edward Island	4	1	0·1	*	73	15	18·75	15·00
British Columbia	–	80	–	1·2	–	1,200	–	15·00

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXVIIIc.—Poplar (Balsam) Lumber, by Provinces, 1917 and 1918.

Tableau XXVIIIc.—Le peuplier (baumier) comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**1,925**	**6,157**	**100·0**	**100·0**	**32,194**	**136,262**	**16·72**	**22·13**
Ontario	1,309	1,385	68·0	22·5	22,282	29,009	17·02	20·95
Quebec	462	443	24·0	7·2	7,072	12,413	15·31	28·02
Manitoba	108	2,070	5·6	33·6	2,140	48,880	19,81	23·61
Alberta	31	50	1·6	0·8	465	1,000	15·00	20·00
Prince Edward Island	15	–	0·8	–	235	–	15·66	–
Nova Scotia	–	2,202	–	35·8	–	44,840	–	20·18
New Brunswick	–	7	–	0·1	–	120	–	17·14

Table XXIX.—Ash Lumber, by Provinces, 1917 and 1918.

Tableau XXIX.—Le frêne comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**6,650**	**7,827**	**100·0**	**100·0**	**152,097**	**197,254**	**22·87**	**25·20**
Quebec	3,444	6,084	51·8	77·7	79,426	142,628	23·06	23·44
Ontario	3,010	1,741	45·3	22·2	68,352	54,581	22·71	31·35
Nova Scotia	155	2	2·3	*	3,626	45	23·40	22·50
Manitoba	28	–	0·4	–	450	–	16·07	–
New Brunswick	13	–	0·2	–	243	–	18·69	–

Commercial species included:—
White ash (Fraxinus americana)—All provinces east of Manitoba.
Black ash (Fraxinus nigra)—P.E.I., N.S., N.B., Que., Ont., (Man.).

Dans le commerce, ce nom comprend:
Le frêne blanc (Fraxinus americana)—Toutes les provinces à l'est du Manitoba.
Le frêne noir (Fraxinus nigra)—I.P.-E., N.-E., N.-B Qué., Ont., (Man.)

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXX.—Beech Lumber, by Provinces, 1917 and 1918.

Tableau XXX.—Le hêtre comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**16,102**	**8,324**	**100·0**	**100·0**	**321,759**	**218,380**	**19·98**	**26·24**
Nova Scotia	12,958	3,362	80·5	40·4	258,726	85,429	18·01	25·41
Ontario	1,809	3,603	11·2	43·3	37,715	97,979	20·85	27·19
Quebec	1,194	1,126	7·4	13·5	22,528	29,398	18·87	26·11
Prince Edward Island	93	173	0·6	2·1	1,825	4,164	19·62	24·07
New Brunswick	48	60	0·3	0·7	965	1,410	20·10	23·50

Commercial species included:—
Beech (Fagus grandifolia)—P.E.I., N.S., N.B., Que., Ont.

Cette essence comprend uniquement:
Le hêtre (Fagus grandifolia) I.P.-E., N.-E., N.-B., Qué., Ont.

Table XXXI.—Oak Lumber, by Provinces, 1917 and 1918.

Tableau XXXI.—Le chêne comme bois de construction, par provinces, 1917 et 1918.

Provinces	Quantity M ft. B.M. — Quantité M.P. M.P.		Per cent distribution — Pourcentage du total		Total value — Valeur totale		Average value per M ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918	1917	1918
					$	$	$ cts.	$ cts.
Total	**1,894**	**2,415**	**100·0**	**100·0**	**76,242**	**109,599**	**40·25**	**45·38**
Ontario	1,505	1,697	79·5	70·3	60,217	76,879	40·01	45·30
Nova Scotia	185	408	9·8	16·9	7,100	21,907	38·38	53·70
Quebec	173	310	9·1	12·8	7,585	10,813	43·84	34·90
Manitoba	30	–	1·6	–	1,300	–	43·33	–
New Brunswick	1	–	*	–	40	–	40·00	–

Commercial species included:—
White oak (Quercus alba)—Que., Ont.
Red oak (Quercus rubra)—P.E.I., N.S., N.B., Que., Ont.
Black oak (Quercus velutina)—Ont.
Bur oak (Quercus macrocarpa)—N.S., N.B., Que., Ont., Man.

Dans le commerce, ce nom embrasse:—
Le chêne blanc (Quercus alba)—Qué., Ont.
Le chêne rouge (Quercus rubra)—I.P.-E., N.-E., N.-B., Qué., Ont.
Le chêne noir (Quercus velutina) Ont.
Le chêne pineux (Quercus macrocarpa)—N.-E., N.-B., Qué., Ont., Man.

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXXII.—Lumber cut from Minor Species, by Kinds of Wood, 1917 and 1918.

Tableau XXXII.—Les essences secondaires comme bois de construction, par essences, 1917 et 1918.

Kinds of Wood—Essences.	Quantity M ft. B.M. — Quantité M.P. M.P.		Value — Valeur		Average value per M ft. B.M. — Valeur moyenne par M.P. M.P.	
	1917	1918	1917	1918	1917	1918
				$	$ cts.	$ cts.
Total	**718**	**9,749**	**28,889**	**235,805**	–	–
Yellow cypress—Cyprès	46	8,219	698	186,566	15·17	22·56
Chestnut—Marronnier	276	735	10,911	22,191	39·53	30·19
Hickory—Noyer tomenteux	168	213	6,761	8,910	40·24	41·83
Butternut—Noyer cendré	121	264	2,773	10,050	22·92	38·07
Cherry—Cerisier[1]	51	251	3,511	6,296	68·84	25·07
Walnut—Noyer commun	51	12	4,135	705	81·08	58·78
Red alder—Aulne rouge	5	55	100	1,087	20·00	19·75

Commercial species included:—
Yellow cypress (Chamaecyparis nootkatensis)—B.C.
Chesnut (Castanea dentata)—Ont., Que.
Hickory (Carya)—Ont.
Butternut (Juglans cinerea)—Ont., Qué.
Walnut (Juglans nigra)—Ont., Que.
Cherry, black (Prunus serotina)—Ont., Que.

Commercialement, les essences secondaires comprennent:
Le cyprès (Chamaecyparis nootkatensis)—C. B.
Le marronnier (Castanea dentata) Ont., Qué.
Le noyer tomenteux (Carya)—Ont.
Le noyer cendré (Juglans cinerea)—Ont., Qué.
Le noyer commun (Juglans nigra)—Ont., Qué.
Le merisier (Prunus serotina)—Ont., Qué.

[1]Connu en France sous le nom de merisier.

Table XXXII.—*Continued.*—Lumber cut from Minor Species, by Kinds of Wood, 1917 and 1918.

Tableau XXXII.—*suite.*—Les essences secondaires comme bois de construction, par essences, 1917 et 1918.

	Cut by Provinces—Sciage par provinces.									
	Quebec.		Ontario.		British Columbia. — Colombie Britannique.		Nova Scotia. — Nouvelle-Ecosse.		New Brunswick. — Nouveau-Brunswick.	
	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918
Total	**332**	**1,629**	**334**	**951**	**51**	**7,119**	**1**	**50**	—	
Yellow cypress—Cyprès	—	1,105	—	—	46	7,114	—	—	—	
Chestnut—Marronnier	36	—	240	735	—	—	—	—	—	
Hickory—Noyer tomenteux	115	72	53	141	—	—	—	—	—	
Butternut—Noyer cendré	109	238	11	26	—	—	1	—	—	
Cherry—Cerisier[1]	31	210	20	41	—	—	—	—	—	
Walnut—Noyer commun	41	4	10	8	—	—	—	—	—	
Red Alder—Aulne rouge	—	—	—	—	5	5	—	50	—	

[1]Connu en France sous le nom de merisier.

Table XXXIII.—Other Kinds of Lumber, by Provinces, 1918.

Tableau XXXIII.—Tous autres bois, comme bois de construction, par provinces, 1918.te

Province.	Quantity Mft. m. — Quantité m. p. m. p.	Per cent distribution — Pourcentage du total.	Value — Valeur	Average value Mft. m. Valeur moyenne par m. p. m. p.
	1918	1918	1918	1918
Total	**35,209**	**100·0**	**753,225**	**21·39**
British Columbia	23,537	66·8	501,113	21·30
Quebec	7,176	20·4	144,728	20·17
Ontario	1,990	5·7	44,713	22·47
New Brunswick	1,837	5·2	45,780	24·92
Nova Scotia	643	1·8	16,506	25·67
Alberta	1	*	10	10·00
Prince Edward Island	25	*	375	15·00

*Less than one tenth of one per cent.—Moins de un dixième de un pour 100.

Table XXXIV.—Custom sawn Lumber, 1918.

Tableau XXXIV.—Bois de construction scié pour les clients, 1918.

Province.	Quantity Mft. m. — Quantité m.p. m.p.	Per cent distribution — Pourcentage du total.	Value. — Valeur	Average value per Mft. m. — Valeur moyenne par m.p. m.p.
	1918	1918	1918	1918
Total	**208,448**	**100·0**	**4,254,014**	**20·41**
Ontario	144,714	69·6	3,007,827	20·78
Nova Scotia	19,512	9·5	398,534	20·42
Quebec	28,920	13·9	544,588	19·52
New Brunswick	10,952	5·2	215,045	19·63
British Columbia	1,222	0·5	23,800	19·47
Prince Edward Island	1,508	0·7	31,825	21·10
Alberta	804	0·3	16,080	20,00
Manitoba	496	0·2	9,920	20·00
Saskatchewan	322	0·1	6,395	19·86

Table XXXV.—Lath Cut, by Provinces, 1917 and 1918.

Tableau XXXV.—Fabrication des lattes, par provinces, 1917 et 1918.

Province.	Quantity m. — Quantité. (milliers.)		Per cent distribution — Pourcentage du total.		Total Value. — Valeur totale.		Average value per M. Valeur moyenne (millier.)	
	1917	1918	1917	1918	1917	1918	1917	1918
Total	**616,949**	**438,100**	**100·0**	**100·0**	**1,828,018**	**1,369,616**	**2·96**	**3·13**
Ontario	255,410	148,999	41·4	34·0	774,152	506,516	3·03	3·39
New Brunswick	185,034	117,521	30·0	26·8	544,169	328,554	2·94	2·79
Quebec	83,714	78,633	13·6	17·9	248,775	214,711	2·97	2·73
British Columbia	42,679	49,741	6·9	11·5	116,557	179,041	2·75	3·60
Nova Scotia	32,154	16,459	5·2	3·7	98,981	41,639	3·08	2·54
Manitoba	13,793	8,698	2·2	2·0	32,633	22,764	2·36	2·61
Alberta	3,235	—	0·5	—	9,707	—	3·00	—
Prince Edward Island	754	805	0·1	0·2	2,267	2,901	3·00	3·60
Saskatchewan	176	17,244	*	3·9	777	73,490	4·41	4·26

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXXVI.—Lath Cut, by Kinds of Wood, 1917 and 1918.

Tableau XXXVI.—Fabrication des lattes, par essences, 1917 et 1918.

Kinds of Wood. Essence.	Quantity, M. Quantité. (milliers).		Per cent distribution. Pourcentage du total.		Total value. Valeur totale.		Average value per M. Valeur moyenne (par millier).	
	1917	1918	1917	1918	1917	1918	1917	1918
Total	**616,919**	**438,100**	**100·0**	**100·0**	**1,828,018**	**1,369,616**	**2·96**	**3·13**
Spruce—Epinette blanche	616,153	194,295	38·9	44·4	689,229	556,518	2·87	2·86
White Pine—Pin blanc	205,036	150,455	33·2	34·3	598,869	504,905	2·92	3·35
Cedar—Cèdre	65,897	16,975	10·7	3·9	231,323	44,654	3·51	2·63
Hemlock—Pruche	37,858	24,668	6·1	5·6	137,336	69,874	3·63	2·83
Douglas fir—Sapin Douglas	20,420	24,650	3·3	5·6	48,700	103,909	2·38	4·21
Balsam fir—Sapin baumier	9,740	5,735	1·6	1·3	30,093	17,083	3·09	2·98
Jack pine—Pin gris	9,432	10,888	1·5	2·5	29,811	39,161	3·16	3·59
Poplar—Peuplier	69	2,267	*	0·5	194	3,638	2·81	1·12
Red Pine—Pin rouge (Other kinds.)	—	—	—	—	—	—	—	—
Yellow pine—Pin jaune (Other kinds.)	—	—	—	—	—	—	—	—
Birch—Bouleau (Other kinds.)	—	—	—	—	—	—	—	—
Tamarack—Tamarac (Autres essences.)	28,344	8,167	4·6	1·9	62,463	29,874	2·20	3·65
Basswood—Tilleul (Autres essences.)	—	—	—	—	—	—	—	—
Ash—Frêne (Autres essences.)	—	—	—	—	—	—	—	—
Maple—Erable (Autres essences.)	—	—	—	—	—	—	—	—
Elm—Orme (Autres essences.)	—	—	—	—	—	—	—	—

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXXVII.—Shingle Cut, by Provinces, 1917 and 1918.

Tableau XXXVII.—Fabrication des bardeaux, par provinces, 1917 et 1918.

Provinces.	Quantity M. Quantité (milliers).		Per cent distribution. Pourcentage du total.		Total value. Valeur totale.		Average value per M. Valeur moyenne par millier	
	1917	1918	1917	1918	1917	1918	1917	1918
Total	**3,020,956**	**2,662,521**	**100·0**	**100·0**	**8,431,215**	**8,184,448**	**2·79**	**3·07**
British Columbia	2,390,402	2,162,184	79·1	81·2	6,606,875	6,641,174	2·76	3·07
Quebec	276,024	249,160	9·1	9·4	776,717	775,058	2·81	3·11
New Brunswick	237,405	170,486	7·9	6·4	670,723	512,812	2·83	3·01
Ontario	74,423	52,393	2·5	2·0	249,801	183,728	3·35	3·51
Saskatchewan	20,695	—	0·7	—	73,265	—	3·54	—
Nova Scotia	14,329	19,138	0·5	0·7	37,560	49,633	2·62	2·59
Prince Edward Island	7,618	8,948	0·2	0·3	16,154	21,466	2·12	2·40
Alberta	60	212	*	*	120	577	2·00	2·72

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXXVIII.—Shingle Cut, by Kinds of Wood, 1917 and 1918.

Tableau XXXVIII.—Fabrication des bardeaux, par essences, 1917 et 1918.

Kinds of Wood. Essences.	Quantity M. Quantité (milliers).		Per cent distribution. Pourcentage du total.		Total value. Valeur totale.		Average value per M. Valeur moyenne (par millier).	
	1917	1918	1917	1918	1917	1918	1917	1918
Total	**3,020,956**	**2,662,521**	**100·0**	**100·0**	**8,431,215**	**8,184,448**	**2·79**	**3·07**
Cedar—Cèdre	2,061,405	2,349,940	68·2	88·3	5,832,907	7,224,934	2·83	3·07
Spruce—Epinette blanche	590,739	94,117	19·6	3·5	1,626,985	249,012	2·75	2·65
White Pine—Pin blanc	164,271	183,268	5·5	6·9	477,239	594,911	2·90	3·25
Hemlock—Pruche	78,553	4,968	2·6	·2	199,424	18,997	2·54	3·82
Douglas fir—Sapin Douglas	63,624	19,182	2·1	·7	159,373	66,621	2·50	3·41
Balsam fir—Sapin baumier	5,535	6,091	0·2	·2	12,287	15,821	2·10	2·59
Jack Pine—Pin gris	1,334	3,583	*	·1	3,248	9,724	2·43	2·71
Poplar—Peuplier	382	96	*	*	1,449	214	3·79	2·23
Other kinds—Autres essences	54,683	1,276	1·8	*	118,303	4,214	2·16	3·30

*Less than one-tenth of one per cent.—Moins de un dixième de un pour cent.

Table XXXIX.—Timber Lands owned, by Provinces, 1918.

Tableau XXXIX.—Terres boisées appartenant à des compagnies ou particuliers, par provinces, en 1918.

Provinces.	Timber lands owned—Terres en bois debout			Cut or burnt over lands owned. — Terres boisées déjà coupées ou incendiées.	
	Total acres of virgin standing timber. — Superficie des terres boisées non exploitées.	Total stand of timber. M. ft. b. m. estimated. — Estimation du volume du bois sur pied.	Total value estimated. — Valeur approximative.	Acres owned. — Superficie.	Estimated value. — Valeur approximative.
	ac.	M. ft. b. m.	$	ac.	$
Canada	**27,118,741**	**88,281,249**	**143,240,913**	**2,190,693**	**4,028,211**
Alberta	68,513	665,312	1,339,485	60,120	304,200
British Columbia	1,116,834	28,614,649	43,546,160	56,736	303,067
Manitoba	493,085	1,204,629	1,265,952	160	800
New Brunswick	3,102,587	5,418,216	11,534,434	438,429	403,376
Nova Scotia	553,168	1,111,970	3,024,163	81,966	103,055
Ontario	8,669,618	9,541,745	23,891,883	401,976	774,144
Prince Edward Island	512	1,255	7,140	546	3,446
Quebec	13,088,891	41,380,473	58,084,196	1,149,510	2,134,875
Saskatchewan	25,533	343,000	547,500	1,180	1,298

Table XL.—Materials used by Provinces, 1918.

Provinces.	Quantity and stumpage value of all— Timber cut for logs. Billots de sciage. From own limits. Possédés.		Bolts for shingles, etc. Billots à bardeaux, etc. From own limits. Possédés.	
	Quantity Quantité	Value Valeur	Quantity Quantité	Value Valeur
	m. ft. M. pds.	$	Cord	$
Canada	**2,637,348**	**14,881,736**	**512,102**	**1,796,272**
Alberta	22,950	99,365	15	60
British Columbia—Colombie Britannique	644,108	2,579,493	144,943	252,094
Manitoba	48,321	117,933	—	—
New Brunswick—Nouveau-Brunswick	326,267	2,434,072	14,657	153,965
Nova Scotia—Nouvelle-Ecosse	99,673	742,055	1,694	15,419
Ontario	745,769	4,743,508	262,139	971,158
Prince Edward Island—Ile du Prince-Edouard	5,392	26,141	87	466
Québec	693,963	4,055,056	88,567	403,110
Saskatchewan	50,676	82,281	—	—
Yukon	229	1,832	—	—

Tableau XL.—Matières premières consommées, par provinces, en 1918.

Volume et valeur sur pied des				Rough lumber purchased as such	Other materials including poles, posts, cross ties, etc.	Freight charges on all materials	Total cost of all materials
Logs for Lumber — Billots de sciage		Bolts for shingles, etc. — Billots à bardeaux, etc.					
Purchased — Achetés				Bois en grume acheté	Autres matièr. premières poteaux, pieux traverses, etc.	Frais de transport des matières premières	Coût total de toutes les matières premières
Quantity — Quantité	Value — Valeur	Quantity — Quantité	Value — Valeur	Value — Valeur	Value — Valeur	Value — Valeur	Value — Valeur
M. ft.—M. pds.	$	Cord	$	[1]	$	$	$
1,409,684	**18,785,348**	**332,930**	**3,171,532**	**1,801,224**	**4,327,486**	**978,959**	**45,742,557**
155	1,530	—	—	—	17	225	101,197
654,097	9,344,707	122,650	1,125,433	476,793	1,599,653	137,056	15,515,229
338	2,990	4,540	13,758	—	33,512	21,375	189,768
127,323	1,940,672	23,285	216,274	291,477	209,264	52,811	5,298,535
43,708	365,584	1,891	31,620	7,272	14,270	25,376	1,201,596
220,230	2,729,628	29,245	92,334	311,126	989,627	472,441	10,309,822
978	9,773	1,185	7,468	—	22,799	700	67,347
362,439	4,356,536	150,134	1,684,645	714,556	1,236,474	268,775	12,749,152
396	3,928	—	—	—	221,870	—	308,079
—	—	—	—	—	—	—	1,832

Table XLI.—Capital invested in the Lumber industry by Provinces, 1918.

Tableau XLI.—Capitaux placés dans l'industrie du bois de construction, par provinces, en 1918.

Provinces.	Mills reporting — Scieries recensées	Land, buildings, machinery, tools, etc., — Terrains, bâtiments, outillage, etc.		Materials on hand, stocks in process, etc., — Matières premières en stock ou en voie de fabricatioa	Cash trading, and operating accounts, and bills receivable. — Fonds de roulement: caisse, factures et billets à recevoir	Total capital — Total des capitaux
		Logging plants — Chantiers	Mills — Scieries			
	No.	$	$	$	$	$
Canada	**3,095**	**36,616,522**	**54,225,840**	**55,059,898**	**36,352,480**	**182,254,740**
Alberta	36	74,925	184,328	153,860	55,421	468,534
British Columbia	201	5,858,862	16,234,726	10,911,316	9,403,544	42,408,448
Manitoba	31	134,772	828,605	719,295	898,567	2,581,239
New Brunswick	224	8,058,804	4,391,957	7,283,567	5,622,527	25,356,855
Nova Scotia	419	1,797,024	1,518,165	1,144,658	598,109	5,057,956
Ontario	875	6,697,923	10,527,006	18,846,365	10,791,050	46,862,344
Prince Edward Island	48	13,100	101,875	9,025	11,290	135,290
Quebec	1,247	13,849,405	20,153,062	15,031,084	8,168,269	57,201,820
Saskatchewan	13	131,707	282,235	934,922	800,245	2,149,109
Yukon	1	—	3,881	25,806	3,458	33,145

Table XLII.—Salaried Employees, by Provinces, 1918.

Tableau XLII.—Personnel, par provinces, en 1918.

Provinces	Salaried employees — Personnel									Total employees and salaries — Total du personnel et des traitements et appointements.		
	Officers of corporations — Administrateurs			Superintendents and managers — Directeurs et gérants			Clerks, stenographers, etc. — Commis, sténographes, etc.					
	No.		Salaries — Traitements	No.		Salaries — Traitements	No.		Salaries — Traitements	No.		Salaries — Traitements
	M — H	F — F	$	M — H	F — F	$	M — H	F — F	$	M — H	F — F	$
Canada	**880**	**13**	**1,640,622**	**939**	**8**	**1,867,245**	**1,468**	**260**	**1,866,013**	**3,287**	**281**	**5,373,880**
Alberta	1	—	600	16	—	14,200	3	1	5,960	20	1	20,760
British Columbia	142	2	418,254	209	2	528,293	292	100	460,100	643	104	1,406,647
Manitoba	4	1	14,950	16	—	34,325	16	4	18,484	36	5	67,759
New Brunswick	83	3	192,888	113	1	197,322	140	52	199,396	336	56	589,606
Nova Scotia	52	3	26,910	47	2	48,898	23	10	15,743	122	15	91,551
Ontario	264	3	601,812	264	2	528,345	384	59	694,746	912	64	1,824,903
Prince Edward Island	—	—	—	2	—	2,200	—	—	—	2	—	2,200
Quebec	329	1	376,190	262	1	488,373	584	28	425,030	1,175	30	1,289,593
Saskatchewan	5	—	9,018	9	—	22,889	26	6	46,554	40	6	78,461
Yukon	—	—	—	1	—	2,400	—	—	—	1	—	2,400

Table XLIII.—Average Number of Employees on Wages, by Provinces, 1918.

Tableau XLIII.—Nombre moyen des ouvriers et journaliers, par provinces, en 1918.

Provinces	Employees on wages — Ouvriers et journaliers				Total employees — Total des ouvriers et journaliers	
	In logging camps — Dans les chantiers		In mills — Dans les scieries			
	Average number — Nombre moyen	Wages — Salaires	Average number — Nombre moyen	Wages — Salaires	Average number — Nombre moyen	Wages — Salaires
		$		$		$
Canada	**26,954**	**19,901,446**	**30,349**	**24,510,796**	**57,303**	**44,412,242**
Alberta	130	92,400	110	81,777	240	174,177
British Columbia	3,598	4,215,603	9,670	9,405,515	13,268	13,621,118
Manitoba	554	226,503	357	314,835	911	641,338
New Brunswick	2,793	1,572,231	3,758	2,443,550	6,551	4,015,781
Nova Scotia	1,218	547,355	1,260	598,885	2,478	1,146,240
Ontario	9,063	6,776,184	7,741	6,150,526	16,804	12,926,710
Prince Edward Island	3	1,146	50	27,365	53	28,511
Quebec	8,825	5,744,971	6,886	4,995,673	15,711	10,740,644
Saskatchewan	770	625,053	512	488,886	1,282	1,113,939
Yukon	—	—	5	3,784	5	3,784

Table XLIV.—Employees on wages by months, 1918.

Provinces	January — Janvier			February — Février			March — Mars			April — Avril			May — Mai			June — Juin			July — Juillet		
	Woods —	Chantiers	Mills — Scieries	Woods —	Chantiers	Mills — Scieries	Woods —	Chantiers	Mills — Scieries	Woods	Chantiers	Mills — Scieries	Woods —	Chantiers	Mills — Scieries	Woods —	Chantiers	Mills — Scieries	Woods	Chantiers	Mills — Scieries
Canada	**45,026**		**18,075**	**42,300**		**18,560**	**35,053**		**20,723**	**21,703**		**31,024**	**24,131**		**39,912**	**16,829**		**43,263**	**12,951**		**43,902**
Alberta	302		92	288		93	228		124	108		160	77		160	97		189	59		123
British Columbia	3,831		8,683	3,928		8,659	3,867		9,363	3,803		10,316	3,802		10,439	3,646		10,254	3,752		10,307
Manitoba	1,368		184	1,390		178	1,241		226	234		305	214		496	85		607	65		532
New Brunswick	5,295		1,446	4,831		1,599	3,645		1,948	2,357		2,929	2,359		5,307	1,258		6,249	558		6,429
Nova Scotia	2,299		747	2,193		787	2,027		818	1,181		1,478	647		1,738	883		2,062	839		1,537
Ontario	15,951		3,516	15,368		3,366	11,832		4,120	5,730		7,722	5,699		11,805	4,448		11,628	3,885		12,598
Prince Edward Island	7		40	8		38	9		41	–		84	–		81	–		69	–		56
Quebec	13,637		3,078	13,167		3,217	10,263		3,702	7,714		7,494	10,806		9,508	6,315		11,268	3,600		11,127
Saskatchewan	2,336		288	1,127		322	1,941		377	576		535	527		886	97		925	196		860
Yukon	–		1	–		1	–		1	–		1	–		1	–		12	–		13

Tableau XLIV.—Ouvriers et journaliers occupés, par mois, en 1918.

August — Août			September — Septembre			October — Octobre			November — Novembre			December — Décembre			Average for the year — Nombre moyen pour l'année			Provinces
Woods — Chantiers	Mills — Scieries		Woods — Chantiers	Mills — Scieries		Woods — Chantiers	Mills — Scieries		Woods — Chantiers	Mills — Scieries		Woods — Chantiers	Mills — Scieries		Woods — Chantiers	Mills — Scieries		
12,463	**41,394**		**17,338**	**36,794**		**24,976**	**29,719**		**30,951**	**22,090**		**39,729**	**18,728**		**26,954**	**30,349**		**Canada.**
66	122		43	85		45	78		113	53		139	36		130	110		Alberta.
3,806	10,334		3,383	9,910		3,226	9,757		3,005	8,981		3,124	8,743		3,598	9,670		Colombie Britannique.
20	431		23	340		305	245		753	160		950	524		354	357		Manitoba.
477	5,996		1,181	5,580		2,911	3,984		3,759	2,123		4,891	1,509		2,793	3,753		Nouveau-Brunswick.
382	1,525		493	1,268		969	1,154		1,186	898		1,513	807		1,218	1,260		Nouvelle-Ecosse.
4,363	11,787		6,354	10,455		9,132	8,247		11,684	4,999		14,312	3,177		9,063	7,741		Ontario.
–	54		–	53		1	35		1	28		1	22		3	50		Ile du Prince-Edouard.
3,323	10,497		5,828	8,543		8,339	5,918		10,125	4,652		12,787	3,628		8,825	6,886		Québec.
26	638		31	549		48	290		325	196		2,012	277		770	512		Saskatchewan.
–	10		–	11		–	11		–	–		–	–		–	5		Yukon.

Table XLV.—Working time, by Provinces, 1918.

Tableau XLV.—Durée des opérations, par provinces, en 1918.

Provinces	Mills in operation — Scieries en exploitation	Days operated on full time — Journées de travail complètes	Days operated on ¾ time — ¾ de journée de travail	Days operated on ½ time — ½ journée de travail	Days idle. — Arrêt complet	Hours worked — Heures de travail: Per shift — Par jour	Hours worked — Heures de travail: Per week — Par semaine
Canada	**3,095**	**340,468**	**6,529**	**5,638**	**588,253**	**9·4**	**56·2**
Alberta	36	3,246	14	55	7,629	9·2	54·9
British Columbia	201	40,451	875	966	18,812	9·4	56·8
Manitoba	31	2,266	21	15	7,122	9·6	57·9
New Brunswick	224	26,722	483	455	40,436	9·7	58·1
Nova Scotia	419	45,431	386	165	81,394	9·6	57·7
Ontario	875	94,585	2,411	1,631	167,373	9·8	58·8
Prince Edward Island	48	6,404	647	302	7,269	9·7	57·9
Québec	1,247	119,320	1,712	2,041	256,015	9·1	53·4
Saskatchewan	13	1,783	10	–	2,159	9·9	59·5
Yukon	1	260	–	–	44	10·0	60·0
Averages per mill—Moyenne par scierie.							
Canada	**1**	**110·00**	**2·11**	**1·82**	**190·07**	–	–
Alberta	1	90·17	·39	1·53	211·91	–	–
British Columbia	1	201·25	4·35	4·81	93·59	–	–
Manitoba	1	73·10	·68	·48	229·74	–	–
New Brunswick	1	119·29	2·16	2·03	180·52	–	–
Nova Scotia	1	108·43	·92	·40	194·25	–	–
Ontario	1	108·10	2·75	1·86	191·29	–	–
Prince Edward Island	1	133·42	12·85	6·29	151·44	–	–
Quebec	1	95·69	1·37	1·64	205·30	–	–
Saskatchewan	1	137·15	·77	–	166·08	–	–
Yukon	1	260·00	–	–	44·00	–	–

Table XLVI.—Fuel Consumption, by Provinces, 1918.

Tableau XLVI.—Consommation de combustible, par provinces, en 1918.

Provinces	Bituminous coal — Charbon bitumineux		Anthracite coal — Charbon anthracite		Coke — Coke		Gasoline — Gazoline	Oil — Pétrole	Wood — Bois		All other fuel — Tous autres combustibles
	Quantity — Quantité	Value — Valeur	Quantity — Quantité	Value — Valeur	Quantity — Quantité	Value — Valeur	Value — Valeur	Value — Valeur	Quantity — Quantité	Value — Valeur	Value — Valeur
Canada	**19,683**	**138,465**	**6,238**	**59,293**	**58**	**294**	**33,131**	**40,928**	**94,334**	**272,327**	**48,068**
Alberta	–	–	–	–	–	–	106	–	702	1,701	220
British Columbia	7,849	48,957	126	1,410	–	–	13,625	29,917	14,168	27,925	11,807
Manitoba	634	4,854	–	–	–	–	–	–	3,901	10,284	79
New Brunswick	1,494	10,983	150	1,100	–	–	2,375	1,274	1,001	2,277	3,324
Nova Scotia	1,110	9,710	18	234	–	–	447	1,192	4,288	9,257	100
Ontario	4,003	30,062	4,942	44,447	–	–	7,357	1,837	42,239	131,546	20,007
Prince Edward Island	–	–	–	–	–	–	8	25	61	167	–
Quebec	4,186	31,050	4	46	58	294	9,213	6,683	27,172	87,184	12,531
Saskatchewan	407	2,849	998	12,056	–	–	–	–	802	1,986	–

Table XLVII.—Power Employed, by Provinces, 1917.

Provinces	Power owned— Engines—Machines et moteurs							
	Steam — A vapeur		Gas — A gaz		Gasolene — A gazoline		Water wheels — Turbines	
	No.	H.P. — C.V.	No.	H.P. — C.V.	No.	H.P. — C.V.	No.	H.P. — C.V.
Canada	**2,516**	**175,639**	**112**	**6,733**	**186**	**3,364**	**893**	**36,009**
Alberta	35	1,750	1	20	1	12	–	–
British Columbia	402	42,840	10	1,215	18	339	19	3,842
Manitoba	42	3,488	–	–	1	2	–	–
New Brunswick	225	22,043	3	42	16	255	34	1,722
Nova Scotia	242	10,517	2	42	17	314	206	6,245
Ontario	804	50,105	69	3,327	46	780	195	8,068
Prince Edward Island	16	455	–	–	–	–	35	667
Québec	723	40,631	24	1,954	87	1,662	403	15,440
Saskatchewan	25	3,690	3	133	–	–	1	25
Yukon	2	150	–	–	–	–	–	–

Tableau XLVII.—Force motrice employée, par provinces, 1918.

—Force motrice appartenante						Power rented — Force motrice louée				Provinces
Water motors — Moteurs hydrauliques		Other powers — Autres forces motrices		Electric motors — Moteurs électriques		Electric motors — Moteurs électriques		Other powers — Autres mécanismes		
No.	H.P. — C.V.	No.	H.P. — C.V.	No.	H.P. — C.V.	No.	H.P. — C.V.	No.	H.P. — C.V.	
67	**2,566**	**44**	**937**	**390**	**15,805**	**476**	**11,653**	**23**	**601**	..... **Canada.**
–	–	1	10	–	–	–	–	–	–	Alberta.
10	483	–	–	315	9,944	344	5,966	3	165	Colombie Britannique.
–	–	–	–	2	9	1	20	–	–	Manitoba.
1	25	–	–	18	3,821	9	92	2	32	Nouveau-Brunswick.
2	35	6	77	1	35	5	205	3	100	Nouvelle-Ecosse.
4	110	8	174	11	361	57	3,513	6	127	Ontario.
–	–	–	–	–	–	–	–	–	–	Ile du Prince Edouard.
50	1,913	29	696	28	910	60	1,857	9	177	Québec.
–	–	–	–	15	725	–	–	–	–	Saskatchewan.
–	–	–	–	–	–	–	–	–	–	Yukon.

Table XLVIII.—Miscellaneous Expenses, by Provinces, 1918.

Tableau XLVIII.—Frais généraux, par provinces, en 1918.

Provinces	Rent of mill factory or works — Loyer des scieries, manufactures ou ateliers	Rent of power — Loyer de force motrice	Taxes, municipal, provincial or federal — Taxes municipales, provinciales ou fédérales	Supplies for board of men and horses — Provisions pour la nourriture des hommes et des chevaux	Rent of offices, insurance and other miscellaneous expenses — Loyer de bureaux, primes d'assurance et dépenses diverses	Contract work — Travail à l'entreprise	Total miscellaneous expenses — Total des autres frais généraux
	$	$	$	$	$	$	$
Canada	**299,792**	**134,275**	**1,448,352**	**5,946,730**	**7,651,967**	**7,360,291**	**22,841,407**
Alberta	1,445	–	2,765	60,142	18,143	1,969	84,464
British Columbia	155,998	67,366	458,835	805,793	2,486,729	882,678	4,857,399
Manitoba	150	–	16,451	131,691	137,015	53,206	338,513
New Brunswick	6,502	546	156,707	538,980	713,405	1,090,721	2,506,861
Nova Scotia	17,993	10,289	34,704	327,394	81,866	145,168	617,414
Ontario	43,531	33,812	504,127	2,612,295	2,682,939	1,119,748	6,996,452
Prince Edward Island	982	–	223	2,552	618	1,160	5,535
Québec	71,726	22,262	252,857	1,167,159	1,411,664	4,060,628	6,986,296
Saskatchewan	265	–	21,683	300,724	119,188	5,013	446,873
Yukon	1,200	–	–	–	400	–	1,600

APPENDIX—APPENDICE.

List of Canadian Sawmills producing 1,000,000 feet and over per annum.

Liste des Scieries canadiennes produisant au moins 1,000,000 de pieds de bois par an.

(a) Mills Producing 1,000,000 feet, but under 5,000,000 feet.

(a) Scieries produisant entre 1,000,000 et 5,000,000 de pieds.

Abitibi, Power & Paper Co., Limited, Iroquois Falls, Ont
Allen, Chas., Hartling, N.S.
Argenteuil Lumber Co., Ltd., Morin Heights, Que
Auld Lumber Co., Latchford, Ont.

B.C. Fir & Cedar Lbr., Co., Ltd., 897-6th Ave. W., Vancouver, B.C.
Beaton Shingle Mill, Otter, B.C.
Beauchemin, P. & Fils, Amos, Que.
Beaver, Abitibi Company, Ltd., Frederick house, Ont.
Beaver, Board Timber Co., Ltd., Charlton Station, Ont.
Beban, Frank, Extension, B.C.
Bertrand, Maurice, Masham Mills, Que.
Bilodeau, Alfred, St. Fabien de Panet, Que.
Black, G. Ernest, Oxford, N.S.
Blais, Frank, Amos, Que.
Bourque, F. H., Rogersville, N.B.
Bray & Gareau, Brunet, Que.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
British America Mills & Timber Co., Ltd., Westholme, B.C.
Brooks, Roy A., Sackville, N.B.
Brooklyn Lumber Company, Ltd., Newport, N.S.
Brooks-Bidlake Cedar Co., Ltd., 806-814 Yorksbire Bldg., Vancouver, B.C.
Buffalo Lakes Lumber Co., Clairmont, Alta.
Burchill, I. P., South Nelson, N.B.
Burtt, E. Lumber Co., Ltd., Cardigan Station, N.B.

Carew, John, Lumber Co., Ltd., Lindsay, Ont.
Canadian Western Fuel Co., Ltd., Nanaimo, B.C.
Carruthers, Wm., Tatamagouche, N.S.
Carson, W. B., Norton, N.B.
Caverly & Sons, Bowsman River, Man.
Charrette, Nap., Kiamika, Que.
Clarke Bros, Limited, Bear River, N.S,
Conger, Lumber Co., Ltd., Parry Sound, Ont.
Corriveau, George, Caron Brook, N.B.
Culligan, J. & A., Culligan, N.B.
Culligan, J. & A., Benjamin River, N.B.
Cummings, A. H. & Son, Ltd., Coaticook, Que.

Dansereau, Geo., Grenville, Que.
Davis & Vernon, Truro, N.S.
Davis, O. B.. Co., Ltd., Grand Falls, N.B.
De Charette & Frère, St. Elie de Caxton, Que.
Demuth, Fred, Demuth, B.C.
Devon, Lumber Co., Ltd., Devon, Ont.
Dominion Lumber Co., Ltd., Chip Lake, Alta.
Dominion Wood & Lumber Co., Ltd., Trout Creek, Ont.
Dube, D. N., Amqui, Que.

Eagle Lumber Co., Ltd., Mont-Laurier, Que.
Eastern Lumber Company, Ladysmith, B.C.
Eddy, E. B,. Co., Ltd., Hull, Que.
Elbow, Lake Lumber Co., Burwash, Ont.
Etter, H. Eugene, Bickerdike, Alta.

Ferguson, G. B. & Co., Six Mile Creek, B.C.
Field Lumber Co., Ltd., Field, Ont.
Finch, Pruyn, & Co., Inc., Henry River, Que.
Fleming & Gibson, Limited, Juniper, N.B.
Fortier, Alfred J., St. Camille Station, Que.
Fownes, C. A., Nyanza, N.S.

Gagon, H. & Frères, Matane, Que.
Gatineau Industrial Co., Ltd., Parent, Que.
Genois, N., St. Raymond, Que.
Grandbois, M. A., St. Casimir, Que.
Grantham Saw Mill, Sandwich, B.C.
Georgetown Spruce Co., Big Bay, B.C.
Giddens, W. W., Londonderry Station, N.S.
Gull River Lumber Co., Limited, Lindsay, Ont.
Gwilt Lumber Co., Ltd., Courtenay, B.C.

Hammond & Collins, Pelletier Mill, N.B.
Harrison, John & Son Co., Ltd., Owen Sound, Ont.
Hawke, E. & Son, Hudson Bay Junction, Sask.
Hay, W. A. & J. H. Millville, N.B.
Hennessy, E. D., Newport, N.S.
Hickman, J. & C., Limited, Port Elgin, N.B.
Higgs & Conn,, Loganville, N.S.
Highland Lumber Co., Ltd., Duncan, B.C.
Hill & Dunfield, Ltd., Windsor, N.S.
Hillcrest Lumber Co., Ltd., Duncan, B.C.
Hill, M. Davison, Onslow Station, N.S.
Hocken Lumber Co., Ltd., Otter Lake Station, Ont.
Huntsville Lumber Co., Limited, Huntsville, Ont.

Indian River Lumber Co., Halifax, N.S.

Jewell Lumber Co., Ltd., Caithness, B.C.
Julien & Julien, Lac Chat, Que.

Kaufman, Jacob, Limited, Rosseau Falls, Ont.
Keenan Bros., Limited, Little Current, Ont.
Kelly, P. & Co., Kelly's Mills, Que.
Kennedy, Harold, Lake St. Joseph, Que.
Kennedy, Harold, Rivière à Pierre, Que.
Kerr Bros, Milford Station, N.S.
King Bros, Oxford, N.S.
King Lumber Co., Ltd., Chipman, N.B.
Knight Bros, Co., Ltd., Burks Falls, Ont.

Ladner Lumber Co., Ladner, B.C.
Laking, Wm., Haliburton, Ont.
Lake Lumber Co., Ltd., Qualicum Beach, B.C.
Lake Rosseau Lumber Co., Boakview, Ont.
Leigh, James & Sons, Victoria, B.C.
Leclerc, Germain, Rivière à La Martre, Que.
Lewis Hardwood Co., Ltd., Lewiston, N.S.
Lewis, D. P., Norton, N.B.
Lincoln Mill, Murrayville, B.C.
Lockhart, R. & Co., Ltd., Fort Frances, Ont.
Loggie, A. & R. Co., Ltd., Loggieville, N.B.
Loggie, W. S., Inkerman, N.B.

McArthur, J. D., Co., Ltd., Lac du Bonnet, Ma
McCreary, James & Son, Larchwood, Ont.
McCulloch Bros, Debert Station, N.S.
McLean, R. B. Lumber Coy., Cloverdale, B.C.
McDonald, Alfred, estate, Peterboro, Ont.
McDougall Bros, 9 Mile River, N.S.
McRae, John S. L., Barry's Bay, Ont.
MacDonald Bros, Welsford, N.B.
McClearn, A. N. & G. S., Mill Village, N.S.
McLaughlin, J. D. & F. B., Three Brooks, N.B.
MacLeod, Alex., Londonderry, N.S.
MacLeod Pulp Co., Ltd., Milton, N.S.
MacMillan, A. S., Antigonish, N.S.
Malenfant, Louis & Alfred, Arsenault, N.B.
Malloy & Bryans, Limited, Haliburton, Ont.
Massicotte & Marchand, Amos, Que.
Mattinson, W. E., Oxford, N.S.
Mercure, Alexandre, Drummondville, Que.
Mickle, Dyment & Son, Whitney, Ont.
Monteith Pulp& Timber Co., Ltd.,123 Bay St., Toronto, Ont
Mont Laurier Scieries, Mont Laurier, Que.
Moose Lake Lumber Co., Ltd., Cobalt, Ont.
Murray & Omanique Lumber Co., Barry's Bay, Ont.
Muskoka Wood Mfg. Co., Limited, Huntsville, Ont.

Namu Lumber Co., Ltd.,739 Hastings St. W., Vancouver, B.C.
Nasmyth Lumber Co., 207 Hastings St. W., Vancouver, B.C.
New Ontario Colonization Co., Ltd., Jacksonboro, Ont.
Newport Saw Mills Ltd., 122 Rogers Blk., Vancouver, B.C
Newville Lumber Co., Newville, N.S.
Northern Lumber& Mercantile Co., Ltd., Willow River, B.C.
Nashwaak Pulp & Paper Co., Ltd., Blackville, N.B.

(a) Mills Producing 1,000,000 feet, but under 5,000,000 feet—Concluded.

(a) Scieries produisant entre 1,000,000 et 5,000,000 de pieds—fin.

O'Brien Limited, South Nelson, N.B.
Owens Lumber Co., Ltd., Montebello, Que.

Painchaud & Miquelon, Chemin Gouin, Que.
Panuke Pulp & Power Co., Ltd., Hartville, N.S.
Parker-Eakins Co., Meteghan Station, N.S.
Patenaude, Eugene, Nominingue, Que.
Pearce Co., Limited, Marmora, Ont.
Pejepscot Paper Co., Salmon River, N.B.
Penticton Lumber Co., Penticton, B.C.
Pierce-Jacobs Lumber Co., Timmins, Ont.

Potvin, Thomas, Nominingue, Que.
Pratt & Shanacy, Sturgeon Falls, Ont.
Pratt, P. R. & A., Matapedia, Que.
Price Bros & Co., Ltd., Chicoutimi West, Que.
Price Bros & Co., Ltd., Lac au Saumon, Que.
Primrose Bros, Riversdale, N.S.

Quance Lumber Co., Nakusp, B.C.

Red Mountain Lumber Co., Penny, B.C.
Reid, Jas. H., Jarlsberg, Ont.
Restigouche Lumber Co., Ltd., Dalhousie Junction, N.B.
Revelstoke Lumber Co., Ltd., Pingston Creek, B.C.
Rheault, Limitée, (La Cie Couture), Mont Joli, Que.
Rhodes Curry Co., Ltd., Amherst, N.S.
Riordon Pulp & Paper Co., Ltd., Calumet, Que.
Ritchie, A. J. & H. H. & D. & Co., Newcastle, N.B.
River Valley Lumber Co., Ltd., Oromocto, N.B.
Robertson, L. M., Ardbeg, Ont.
Robinson, Wright & Co., Ltd., Shulie, N.S.
Rock Creek Lumber Co., Ltd., Flagstone, B.C.
Royston Lumber Co., Royston Road, B.C.
Ruttan, J. T., Aleza Lake, B.C.

Ste. Agathe Lumber and Construction Co., Ltd., Ste. Agathe des Monts, Que.
St. Lawrence Lumber Co., (La Cie de Pulpe de Chicoutimi), Chandler, Que.
St. Maurice Paper Co., Limited, St. Gabriel de Brandon, Que.
St. Maurice Paper Co., Ltd., Three Rivers, Que.
St. Maurice Paper Co., Ltd., Charlemagne, Que.
Saguenay Lumber Co., Les Escoumains, Que.
Savoie & Co., Manseau, Que.
Saskatchewan Lumber Co., Ltd., Crooked River, Sask.
Sayre, F. E., Hartland, N.B.
Shier, J. D., Lumber Co., Ltd., Bracebridge, Ont.
Shortreed, The Estate, Kearney, Ont.
Sicard, Emery, Amos, Que.
Simard Lumber Co., Ltd., Sayabec, Que.
Smith Bros, Portage du Fort, Que.
Smith, John B. & Sons, Ltd., Callander, Ont.
Smith, Manning J., River Side, N.B.
Smith Lumber Co., Ltd., R.R. No. 2, Woodstock, N.B.
Smith-Hutchinson Lumber Co., Ltd., Bradner, B.C.
Spence, C. E., Debert, N.S.
Stanley Saw & Planing Mills, Stanley, N.B.
Stearns, M. L. & Son, Limited, L'Orignal, Ont.

Stirrett, John & Sons, Port Arthur, Ont.
Stone Lumber Co., Ltd., Marksville, Ont.
Swift Creek Lumber Co., Ltd., Swift Creek, B.C.

Temiscouata Lumber Co., Notre-Dame du Lac, Que.
Tennant, Geo., Bracebridge, Ont.
Thompson & Ludgate, McKellar, Ont.
Tobique Lumber Co., Ltd., Campbellton, N.B.
Trout Creek Lumber Co., Powassan, Ont.
Trudel, A. A., St. Adelphe de Champlain, Que.
Trudeau, H. E., Lac Castor, Que.
Twin Falls Lumber Co., Ltd., McDougalls Mills, Ont.

Union Shingle Mill Co., White Rock, B.C.
Upham Lumber Co., Odell River, N.B.
Urquhart, J. K., Courtenay, B.C.

Vancouver, Cedar Mills, Ltd., Dollarton, B.C.
Virginia Lumber Co., Ltd., Coombs, B.C.

Wallace Lumber Co., Blind River, Ont.
Wapskehegan Lumber Co., Ltd., Wapske, N.B.
Warne, H. T., Digby, N.S.
Warne, H. T., Five Mile River, N.S.
Weismiller, H., Bala, Ont.
Welsford Lumber Co., St. George, N.B.
Welsford Lumber Co., Welsford, N.B.
West, Alfred, Coles Island, N.B.
White, Charles & Son, Ltd., Sussex, N.B.
White & Patterson, St. George, N.B.
White, Charles T. & Sons, Ltd., Sussex, N.B.
White, W. S. & Co., St. John, N.B.
Wilbur, Herbert, Midway, N.S.

(b) Mills Producing 5,000,000 feet, but under 10,000,000 feet.

(b) Scieries produisant entre 5,000,000 et 10,000,000 de pieds.

Atlantic Lumber Co., Ltd., South Maitland, N.S.
Austin & Nicholson, Chapleau, Ont.

Belgo-Canadian Pulp & Paper Co., Ltd., Shawinigan Falls, Que.
Blué River Lumber Co., Ltd., Blue River, Que.
Brown Corporation, LaTuque, Que.
Buckley, David Joseph, Newcastle, N.B.
Burgess, James & Sons, Ltd., Grand Falls, N.B.
Burrard, Sawmills, Ltd., Alta Lake, B.C.

Cedar Cove Sash & Door Co., Ltd., Vancouver, B.C.
Continental Lumber Co., Ltd., Charlo, N.B.
Copping, Wm., Joliette, Que.

Dalhousie Lumber Co., Ltd., Dalhousie, N.B.
Davidson's, James Sons, Davidson, Que.
Day, W. H. Lumber Co., Ltd., Cheakamus, B.C.
Dennis Canadian Co., Whitney, Ont.

Eburne Saw Mills, Ltd., Marpole, B.C.
Edgewood Lumber Co., Ltd., Castlegar, B.C.
Elk Lumber Co., Ltd., Fernie, B.C.

Hettler, Herman G., Lumber Co., Field, Ont.
Howard, B. C. & Co., Lake Frontiere, Que.

Iberville Lumber Co., Sault-au-Mouton, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.
Letherby, Chew, Blind River, Ont.
Little Current Lumber Co., Little Current, Ont.
Louise Lumber Co., Lake Megantic, Que.
Louison Lumber Co., Ltd., Jacquet River, N.B.
McLaren Lumber Co., Blairmore, Alta.
Maple Ridge Lumber Co., Ltd., Port Haney, B.C.
Masset Inlet Lumber Co., Ltd., Port Clements, B.C.
Metis Lumber Co., Price, P.O., Que.
Miramichi Lumber Co., Chatham, N.B.
Murray & Gregory, St. John, N.B.

New Ladysmith Lumber Co., Nanaimo, B.C.

Okanagan Saw Mills, Ltd., Enderby, B.C.

Pigeon River Lumber Co., Ltd., Port Arthur, Ont.
Price Bros & Co., St. Marguerite, Bay Mill, Que.
Prince Rupert Lumber Co., Prince Rupert, B.C.
Price Bros & Co., Ltd., Batiscan Station, Que.
Price Bros & Co., Ltd., Montmagny, Que.

Randolph & Baker, Limited, Randolph, N.B.
Richardson, James, Co., Ltd., Matane, Que.

St. Maurice Lumber Co., Trois-Rivières, Que.
Sayre & Holly Lumber Co., Ltd., Chipman, N.B.
Shawnigan Lake Lumber Co., Ltd., Shawnigan Lake, B.C.
Shepard & Morse Lumber Co., Ltd., Ottawa, Ont.
Shepard & Morse Lumber Co., Ltd., L'Anse aux Cousins, Que.
Sinclair, Edward, Lumber Co., Newcastle, N.B.
Slocan Valley Lumber Co., Koch's Siding, B.C.
Spruce Products Co., 837 Hastings St. W., Vancouver, B.C.
Stetson, Cutler & Co., Lancaster, N.B.
Sullivan, Wm. M., Red Bank, N.B.

York & Sunbury Milling Co., Ltd., South Devon, N.B.

(c) Mills Producing 10,000,000 feet, but under 15,000,000 feet.
(c) Scieries produisant entre 10,000,000 et 15,000,000 de pieds.

Adolph Lumber Co., Baynes Lake, B.C.
Alberta Lumber Co., Ltd., 790-6th Ave. W., Vancouver, B.C.

Beaver River Lumber Co., Ltd., New Westminster, B.C.
Bishop Lumber Co., Ltd., Nesterville, Ont.
Burrows, T. A., Lumber Co., Ltd., Grandview, Man.

Canadian Pacific Railway Co., Ltd., Bull River, B.C.
Craig-Taylor, Lumber Co., Ltd., Otter, B.C.

Drolet, Joseph, S., Ancienne Lorette, Que.

East Kootenay Lumber Co., Ltd., Jaffray, B.C.
Eddy Bros. Co., Ltd., Blind River, Ont.

Giscome Lumber Co., Ltd., Giscome, B.C.
Gloucester Lumber & Trading Co. Bathurst, N.B.

Hammond Cedar Co., Ltd., Hammond, B.C.
Hope Lumber Co., Thessalon, Ont.

King, M. B., Lumber Co., Ltd., Newton, B.C.

Miller, W. H., Co., Ltd., Campbellton, N.B.

Pacific Mills, Ltd., Ocean Falls, B.C.
Pembroke Lumber Co., Pembroke, P.O., Ont.

Robertson & Hackett Saw Mills, Ltd., Vancouver B.C.
Ross-Saskatoon Lumber Co., Ltd., Waldo, B.C.

Sidney Mills, Limited, Sidney, B.C.
Snowball, J. B., Co., Ltd., Chatham, N.B.
South Shore Lumber Co., Ltd., No. 1 Front St., Vancouver B.C.
Stetson, Cutler & Co., St. John, N.B.

Thurston-Flavelle, Ltd., Port Moody, B.C.

Wayagamack Pulp & Paper Co., Ltd., Trois-Rivières, Que

(d) Mills Producing 15,000,000 feet, but under 20,000,000 feet.
(d) Scieries produisant entre 15,000,000 et 20,000,000 de pieds.

Abbotsford Lumber, Mining and Development Co., Ltd., Abbotsford, B.C.
Alberni Pacific Lumber Co., Ltd., Port Alberni, B.C.

Beck, C. Mfg. Co., Ltd., Penetanguishene, Ont.

Chaleur, Bay Mills, Restigouche, Que.
Cleveland-Sarnia Saw Mills Co., Ltd., Sarnia, Ont.
Colonial Lumber Co., Ltd., Pembroke, Ont.

Davison Lumber & Mfg. Co., Ltd., Crossburn, N.S.
Dominion Creosoting & Lumber, Ltd., Dominion Mills, B.C.

False Creek Lumber Co., Ltd., Vancouver, B.C.
Fenderson, John & Co., Inc., Sayabec Station, Que.
Finger Lumber Co., Ltd., The Pas, Man.

Genoa Bay Lumber Co., Ltd., Genoa Bay, B.C.
Georgian Bay Lumber Co., Ltd., Waubaushene, Ont.

McLaren, James, Co., Ltd., Buckingham, Que.
Milne, Wm. & Son, Ltd., North Bay, Ont.

Nicola Pine Mills, Ltd., Canford Mill, B.C.

Price Bros, Co., Ltd., Rimouski, Que.

Red Deer Lumber Co., Ltd., Barrows, Man.
River Ouelle Pulp & Lumber Co., St. Pacome, Que.

Victoria Harbour Lumber Co., Ltd., Victoria Harbour, Ont.

Whalen Pulp & Paper Mills, Ltd., Port Alice, B.C.

(e) Mills Producing 20,000,000 feet and over.
(e) Scieries dont la production atteint ou dépasse 20,000,000 de pieds.

Bathurst Lumber Co., Ltd., Bathurst, N.B.
B.C. Mills Timber & Trading Co., Vancouver, B.C.
Booth, J. R., 6 Booth St., Ottawa, Ont.
Brunette Saw Mill Co., Ltd., New Westminster, B.C.

Campbell River Lumber Co., Ltd., White Rock, B.C.
Canadian Robert Dollar Co., Ltd., Dollarton, B.C.
Canadian Western Lumber Co., Ltd., Fraser Mills, B.C.
Chew, M., Midland, Ont.
Columbia River Lumber Co., Ltd., Golden, B.C.
Crow's Nest Pass Lumber Co., Wardner, B.C.

Edwards, W. C. & Co., Ltd., Rockland, Ont.

Fraser Companies, Ltd., Edmundston, N.B.

Gillies Bros, Ltd., Braeside, Ont.
Gilmour & Hughson, Ltd., Hull, Que.
Gordon, Geo. & Co., Ltd., Cache Bay, Ont.
Graves, Bigwood & Co., Byng Inlet, Ont.

Hanbury, J. & Co., Ltd., Granville St., Vancouver, B.C.
Hawkesbury Lumber Co., Ltd., Hawkesbury, Ont.

Keewatin Lumber Co., Ltd., Keewatin, Ont.

Ladder Lake Lumber Co., Ltd., Big River, Sask.

McFadden & Malloy, Blind River and Spragge, Ont.
McGibbon Lumber Co., Penetanguishene, Ont.
McLachlin Bros, Ltd., Arnprior, Ont.

Otis Staples Lumber Co., Wycliffe, B.C.

Prince Albert Lumber Co., Ltd., Prince Albert, Sask.

Rat Portage Lumber Co., Ltd., Vancouver, B.C.
Reynolds Co., Ltd., Port Moody, B.C.
Richards Manufacturing Coy., Ltd., Campbellton, N.B.

Shevlin-Clarke Co., Ltd., Fort Frances, Ont.
Shives Lumber Co., Ltd., Campbellton, N.B.
Small & Bucklin Lumber Co., Ltd., New Westminster, B.C.
Spanish Mills Co., Ltd., Spanish Mills, Ont.
Spanish River Lumber Co., Ltd., Massey, Ont.

Timberland Lumber Co., Ltd., New Westminster, B.C.

Vancouver Lumber Co., Ltd., Cambie St., Vancouver, B.C.
Victoria Lumber & Mfg. Co., Ltd., Chemainus, B.C.

CANADA

BUREAU FÉDÉRAL DE LA STATISTIQUE

RECENSEMENT INDUSTRIEL, 1918

Bois de Construction, Lattes, Bardeaux, Etc.

1918

Préparé en collaboration avec la Division Forestière du Dominion; le ministère des Terres Domaniales, de la Nouvelle-Ecosse; le ministère des Terres et des Mines, du Nouveau-Brunswick ; le ministère des Terres et des Forêts, de Québec; et le ministère des Terres de la Colombie Britannique

IMPRIMÉ PAR ORDRE DU PARLEMENT

OTTAWA

THOMAS MULVEY

IMPRIMEUR DE SA TRÈS EXCELLENTE MAJESTÉ LE ROI

1920

[N° 17a—1921]

RECENSEMENT INDUSTRIEL DE 1918

BOIS DE CONSTRUCTION, LATTES, BARDEAUX, ETC.

Préface

Les données statistiques que contient ce rapport sur l'industrie du bois de sciage ont été recueillies et compilées en 1919; elles se rapportent à l'année terminée le 31 décembre 1918. Nous adressons nos remerciements aux fonctionnaires du ministère des Terres Domaniales de la Nouvelle-Ecosse, du ministère des Terres et des Mines du Nouveau-Brunswick, du ministère des Terres et des Forêts de Québec, et du ministère des Terres de la Colombie Britannique, qui nous ont aidé dans la préparation de la liste des établissements de cette nature.

Ce rapport est l'œuvre conjointe du Bureau Fédéral de la Statistique et de la Division Forestière du ministère de l'Intérieur. La compilation des chiffres a été faite au Bureau sous la direction de M. J. C. Macpherson; ces chiffres ont été vérifiés et le rapport rédigé par M. R. G. Lewis, B.Sc.F., de la Division Forestière.

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Bureau Fédéral de la Statistique,
Ottawa, juillet 1920.

17a (11706)—4½

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L'INDUSTRIE DU BOIS DE CONSTRUCTION EN 1918

Introduction et résumé

Cette industrie a atteint son apogée en l'année 1918, qui a vu sa production portée à $146,333,192, dont $103,700,620 pour le bois de sciage, $8,184,448 pour les bardeaux, $1,369,616 pour les lattes et $33,078,508 pour les produits divers. Nous donnons ci-dessous les chiffres comparatifs de la production du bois de construction, des lattes et des bardeaux, par quantités et valeur, depuis l'année 1908. Depuis 1908 jusqu'à 1916, les statistiques ont été recueillies et compilées par la Division Forestière du ministère de l'Intérieur, et depuis 1916 par le Bureau Fédéral de la Statistique, agissant conjointement avec la Division Forestière.

Volume et valeur du bois de construction, des bardeaux et des lattes, de 1908 à 1918

Années.	Bois de construction scié		Bardeaux sciés		Lattes sciées	
	Quantité		Quantité		Quantité	
	M.P. M.P.	Valeur	M	Valeur	M	Valeur
		$		$		$
1908	3,348,176	54,338,036	1,499,396	3,101,996	671,562	1,487,125
1909	3,814,942	62,819,477	1,988,753	3,701,132	822,124	1,979,034
1910	4,451,652	77,503,187	1,976,640	3,557,221	851,953	1,943,544
1911	4,918,202	75,830,954	1,338,474	3,512,078	965,235	2,212,226
1912	4,389,723	69,475,784	1,578,343	3,175,319	899,016	2,064,622
1913	3,816,642	65,796,438	1,485,279	3,064,641	739,678	1,783,283
1914	3,946,254	60,363,369	1,843,554	3,688,746	625,010	1,585,484
1915	3,842,676	61,919,806	3,089,470	5,734,552	793,226	2,040,819
1916	3,490,550	58,365,349	2,897,562	5,962,933	665,588	1,743,040
1917	4,151,703	83,655,097	3,020,956	8,431,215	616,949	1,828,018
1918	3,886,631	103,700,620	2,662,521	8,184,448	438,100	1,369,616
Moyenne 1908—1918	4,005,196	70,342,556	2,170,995	4,737,693	735,313	1,821,610

Statistiques comparatives.—Le tableau ci-dessous résume les caractéristiques essentielles de l'industrie du bois de construction, pendant les années civiles 1917 et 1918. Le nombre des scieries en exploitation a augmenté de 216 unités en 1918, soit 7.50 p.c.; les capitaux absorbés par cette industrie ont augmenté de $32,988,721, soit 22.10 p.c.; le personnel de ses commis, employés, etc., s'est accru de 409 personnes, soit 12.63 p.c. et leurs appointements de $592,580 ou 12·39 p.c.; leurs ouvriers et journaliers, bûcherons, flotteurs, scieurs, ont vu leur nombre s'augmenter de 3,985, soit 7.47 p.c. et leurs salaires de $9,999,831, soit 29.06 p.c.; le coût du combustible a monté de $7,060, soit 1.21 p.c.; les frais généraux de $5,028,844 ou 28.45 p.c.; les matières premières et les fournitures diverses à l'usage des scieries ont subi une ascension de $5,151,804, ou 12 65 p.c.; enfin la valeur de la production s'est accrue de $30,448,287, soit 26.28 p.c.

Statistiques comparatives de l'industrie du bois en 1917 et 1918

Nomenclature	1917	1918	Augmentation sur 1917	
			Absolue	Pourcentage
Scieries recensées.....nomb.	2,879	3,095	216	7·50
Capitaux engagés.....$	149,266,019	182,254,740	32,988,721	22·10
Employés.....nomb.	3,159	3,568	409	12·63
Appointements.....$	4,781,300	5,373,880	592,580	12·39
Ouvriers et journaliers .....nomb.	53,328	57,303	3,985	7·47
Salaires .....$	34,412,411	44,412,242	9,999,831	29·06
Coût du combustible .....$	585,446	592,506	7,060	1·21
Frais généraux.....$	17,678,288	22,707,132	5,028,844	28·45
Coût des matières premières.....$	40,725,028	45,876,832	5,151,804	12·65
Valeur des produits.....$	115,884,905	146,333,192	30,448,287	26·28

Le résumé qui suit indique, par provinces, pour chacune des années 1917 et 1918, (*a*) le rang des différentes provinces au point de vue de la production, (*b*) le nombre de scieries en exploitation, (*c*) les capitaux engagés, (*d*) le personnel occupé, (*e*) les appointements et les salaires, (*f*) le coût des matières premières et (*g*) la valeur des produits.

STATISTIQUES COMPARATIVES, PAR PROVINCES, ENTRE 1917 ET 1918

Provinces.	Rang comme production	Etablissements recensés	Capital	Personnel	Salaires, appointements et traitements	Coût des matières premières	Valeur de la production
1917	nomb.	nomb.	$	nomb.	$	$	$
Alberta	1	52	1,088,055	377	296,934	142,818	788,954
Colombie Britannique	1	251	41,848,719	14,744	12,442,583	13,969,312	33,527,560
Manitoba	7	29	2,416,167	835	525,221	286,841	1,209,175
Nouveau-Brunswick	4	255	21,183,328	7,031	4,119,699	6,210,006	15,191,275
Nouvelle-Ecosse	5	462	8,865,356	3,209	1,399,665	1,579,845	5,185,258
Ontario	2	603	43,884,845	17,245	11,575,659	9,868,769	31,054,315
Ile du Prince-Edouard	9	60	127,502	68	26,856	36,905	151,633
Québec	3	1,151	27,551,019	11,503	7,764,083	8,106,134	26,630,120
Saskatchewan	6	16	2,301,028	1,470	1,043,011	287,510	2,146,615
Canada		**2,879**	**149,266,019**	**56,477**	**39,193,711**	**40,488,148**	**115,884,905**
1918							
Alberta	8	36	468,534	261	194,937	101,497	490,572
Colombie Britannique	3	201	42,408,448	14,015	15,027,765	15,515,229	39,442,660
Manitoba	7	31	2,581,239	952	709,097	189,768	1,316,792
Nouveau-Brunswick	4	224	25,356,855	6,942	4,605,387	5,298,535	14,977,974
Nouvelle-Ecosse	5	419	5,057,956	2,615	1,237,791	1,201,596	4,563,892
Ontario	1	875	46,862,344	17,780	14,751,613	10,309,822	42,872,958
Ile du Prince-Edouard	9	48	135,290	55	30,711	67,347	199,684
Québec	2	1,247	57,201,820	16,915	12,030,237	12,749,152	40,199,895
Saskatchewan	6	13	2,149,109	1,328	1,192,400	308,079	2,258,450
Yukon	10	1	33,145	5	6,184	1,832	10,315
Canada		**3,095**	**182,254,740**	**60,868**	**49,786,122**	**45,742,557**	**146,333,192**

La Colombie Britannique, qui occupait le premier rang au point de vue de la production en 1917, est descendue à la troisième place en 1918, étant dépassée par Ontario de $3,430,298 et par Québec de $757,235. Toutes les autres provinces ont conservé le même rang. La province de Québec possède le plus grand nombre de scieries en exploitation, soit 1,247; Ontario vient en second lieu avec 875; la Nouvelle-Ecosse est troisième avec 419; le Nouveau-Brunswick quatrième avec 224 et la Colombie Britannique, cinquième avec 201. Dans presque toutes les provinces on constate une diminution du nombre des scieries en activité, sauf dans Québec où leur nombre a augmenté de 96, dans Ontario où l'on en compte 272 de plus que l'an dernier et au Manitoba où l'on en trouve 2 nouvelles.

Les capitaux placés dans cette industrie, pour l'ensemble du Canada, représentent une somme de $182,254,740 au lieu de $149,266,019 en 1917, soit une augmentation pour l'année de $32,988,721 ou 22·10 p.c.

Il y eut également un accroissement notable dans le nombre du personnel; il s'est traduit par 4,394 personnes soit 7·8 p.c. Ce personnel se composait de 60,868 personnes dont 3,568 étaient des commis et employés et 57,303 des ouvriers et journaliers. Les appointements des employés en 1918, se sont élevés à $5,373,880, en augmentation sur l'année précédente de $592,580 ou 12·39 p.c. Les ouvriers et journaliers travaillant tant dans les chantiers en forêt que dans les scieries composaient une armée de 57,303 individus en 1918 au lieu de 53,318 en 1917; leurs salaires qui s'élevaient à $34,412,411 en 1917 ont été portés à $44,412,242 en 1918, soit une augmentation de $9,999,831, ou 29·06 p.c.

Production

Les 3,095 scieries en exploitation pendant l'année 1918 établissent ainsi qu'il suit le bilan de leur production collective:

Bois de construction,	3,886,631 mille pieds, évalués à	$ 103,700,620
Lattes,	438,100 milliers, évalués à	1,369,616
Bardeaux,	2,662,521 milliers, évalués à	8,184,438
Bois de pulpe,	1,516,783 cordes, évalués à	18,416,438
Produits divers (sans quantités spécifiées)		14,662,070
Valeur totale de la production de 1918		$ 146,333,070

Bois de construction.—Le tableau I, consacré au bois de construction, indique pour les années 1917 et 1918, par provinces, le nombre de scieries en exploitation, le volume et la valeur du bois scié, sa valeur moyenne par mille pieds, le pourcentage du sciage et le pourcentage de l'augmentation ou de la diminution sur 1917.

Dans tout le Canada on constate en 1918 une diminution de 265,072 mille pieds, sur 1917. Dans toutes les provinces on constate une décroissance, à l'exception de Québec, où s'est produite une augmentation de 13,510 mille pieds. L'augmentation de la valeur du bois de construction produit pendant l'année est due principalement à la hausse des cours. Pour l'ensemble de toutes les catégories de bois, le prix moyen à la scierie, en 1917, était de $20.15 par mille pieds, contre $26.68 en 1918, soit une augmentation par $6.53 par mille pieds ou 32·4 p.c.

Dans le tableau II on trouve les statistiques relatives aux différentes essences du bois scié dans tout le pays. Plus de vingt-cinq différentes essences de bois étaient classifiées, embrassant approximativement soixante-dix variétés diverses. L'épinette blanche, le pin blanc et le sapin Douglas conservent leur position et demeurent les essences principales travaillées dans les scieries, de même que les années précédentes. On constate une notable diminution, en 1918, dans la production du bois d'épinette, comparée à celle de 1917, et s'élevant à 323,781 mille pieds. La pruche, le cèdre, le pin rouge, le sapin-baumier et le pin massif sont, les uns et les autres, en décroissance tandis que le pin blanc, le sapin Douglas, le tamarac, tout le bois dur (à l'exception du hêtre et du noyer) et le "sciage pour les clients" présentent de légères augmentations. On ne trouve pas dans les rapports les essences du bois de construction scié pour la clientèle; il y en eut 208,448 mille pieds, estimés à $4,254,014.

Les tableaux III et IV traitent de la production du bois en distinguant les bois durs des bois tendres; le tableau III indique la quantité et le pourcentage de la totalité du bois scié, par provinces, et le tableau IV par essences de bois. Le pourcentage des bois tendres a diminué de 1·7 p.c. sur 1917, les bois durs augmentant dans la même proportion. Ainsi qu'on le verra dans le tableau IV les principaux bois durs sont le bouleau, l'érable, le tilleul, l'orme, le peuplier et le hêtre, qui tous ensemble représentent près de 94 p.c. de la totalité, c'est-à-dire 189,296 mille pieds sur un total de 201,667 mille pieds. Les tableaux V à XIII inclusivement sont consacrés à la production provinciale du bois de construction, par essences, celles-ci étant placées dans l'ordre numérique de la production de 1918. Ces tableaux indiquent, pour chaque essence: (*a*) le volume du bois scié, (*b*) le pourcentage de cette essence par rapport au total, (*c*) la valeur de ce bois, (*d*) la valeur moyenne par mille pieds, mesure de planche, de chacune des essences énumérées.

Dans la Colombie Britannique on constate une baisse de 42,908 mille pieds dans la production, à laquelle le cèdre a contribué pour 30,457 mille pieds, le sapin-baumier pour 17,385 mille pieds et le pin blanc pour 14,190 mille pieds. Par contre le sapin Douglas, l'épinette et le tamarac présentent des augmentations respectives de 9,666, 14,045 et 24,718 mille pieds. La valeur moyenne, par mille pieds, s'est élevée de $18.75 en 1917 à $24.49 en 1918, soit une augmentation de 30 p.c. Dans Ontario la production est demeurée presque stationnaire,

la diminution, par rapport à 1917, se chiffrant par 202 mille pieds. Parmi les essences en décroissance, figurent le pin blanc pour 26,384 mille pieds, la pruche pour 43,150 mille pieds et le pin rouge pour 2,200 mille pieds, mais ces régressions sont compensées dans une certaine mesure par des augmentations dans la production de l'épinette, à concurrence de 14,650 mille pieds, de l'érable à concurrence de 11,777, du pin gris à concurrence 6,799 mille pieds, du tilleul à concurrence de 5,295 et du bois scié pour la clientèle à concurrence de 36,416 mille pieds. Dans cette province, la valeur moyenne du bois de construction, qui était de $22.91 en 1917 est montée à $30.78 en 1918, soit une augmentation de 34·5 p.c.

La province de Québec est la seule qui accuse une augmentation de production sur l'année 1917; elle se chiffre par 13,510 mille pieds. Le bois d'épinette a décru de 89,068 mille pieds par rapport à l'année précédente. Mais cette perte a été contrebalancée par les augmentations de presque toutes les autres essences et aussi du bois scié pour la clientèle. L'augmentation de la valeur moyenne fut de $4.66 par mille pieds, ou 23 p.c.

Le Nouveau-Brunswick a produit 150,872 mille pieds de moins que l'an dernier. L'épinette a baissé de 189,596 mille pieds, la pruche de 10,030 mille pieds et le pin rouge de 4,557 mille pieds. D'autre part, le pin blanc a augmenté de 32,188 mille pieds, le cèdre de 7,199 mille pieds et le bouleau de 9,309 mille pieds. Le cours moyen du bois de construction qui était de $19.08 par mille pieds en 1917, est monté à $27.54 en 1918, soit une avance d'environ 44 p.c.

La production de la Nouvelle-Ecosse, qui avait été de 236,710 mille pieds en 1917, est tombée à 176,332 mille pieds en 1918, diminuant ainsi de 60,378 mille pieds, dont 49,228 mille pieds pour l'épinette, 5,083 mille pieds pour la pruche et 9,596 mille pieds pour le hêtre. Le bouleau, l'érable et le peuplier sont les principales essences qui aient bénéficié d'une augmentation. Le prix moyen, par mille pieds, pour l'ensemble des essences du bois de construction, établi à $18.61 en 1917 est aujourd'hui de $23.21, soit une augmentation de 25 p.c.

Toutes les provinces de prairies, ont vu décroître le volume de leur production, celle de la Saskatchewan étant inférieure de 12,540 mile pieds à celle de 1917, celle de l'Alberta de 11,239 mille pieds et celle du Manitoba de 169 mile pieds. La presque totalité de cette diminution est attribuable à la baisse de la production du bois d'épinette. Comme dans les autres provinces, le prix du bois a continué sa marche ascendante, les augmentations étant de 21 p.c. en Saskatchewan, 29 p.c. au Manitoba, et 32 p.c. dans l'Alberta.

Dans l'Ile du Prince-Edouard, la diminution constatée est minime, ne dépassant pas 503 mille pieds. Le bois d'épinette scié est en augmentation de 504 mille pieds; le sapin-baumier et le hêtre présentent également de légères augmentations, mais toutes les autres essences sont restées inférieures à la production de 1917. La moyenne du prix de vente qui était de $18.17 en 1917 est montée à $21.64 en 1918, augmentation d'environ 20 p.c.

Chacun des tableaux numérotés XIV à XXXIV est consacré à une essence particulière et donne les chiffres de sa production totale et par provinces, pendant les années 1917 et 1918. On y a ajouté une liste de variétés de bois connues et vendues dans le commerce sous un nom unique; les provinces où croissent ces différentes variétés sont indiquées en abrégé. Lorsque cette évaluation est placée entre crochets, cela signifie que cette essence n'a qu'une très minime valeur commerciale dans cette province. Les principales essences de bois dont la production a subi une baisse en 1908 sont l'épinette (323·781 m.p.), la pruche (50,751 m.p.), le sapin-baumier (18,389 m.p.), le cèdre (18,136 m.p.), le pin massif (10,396 m.p.), le hêtre (7,778 m.p.), l'orme (1,829 m.p.), le peuplier cotonnier (1,545 m.p.), et le pin rouge (635 m.p.). Au contraire toutes les autres essences sont en progrès, l'augmentation la plus considérable étant dans le bois scié pour la clientèle (tableau XXXIV), qui s'élève à 47,816 mille pieds.

Production de la latte.—La production de la latte est indiquée dans le tableau XXXV, par provinces et dans le tableau XXXVI par essences de bois. Comparée à celle de 1917 cette production a diminué en 1918 de 178,849 milliers, causée par le ralentissement de la construction, conséquence du coût élevé de la main-d'œuvre et des matériaux. Le prix moyen, par millier, pour le Canada, s'est élevé de $2.96 en 1917 à $3.13 en 1918. Ontario tient la tête dans la production de la latte avec 34 p.c. du total, le Nouveau-Brunswick occupe la seconde place avec 26.8 p.c., Québec est troisième avec 17.9 p.c. et la Colombie Britannique quatrième avec 11.5 p.c. Si l'on considère les essences ayant servi à cette fabrication, on constate qu'en 1918 l'épinette continue à occuper le premier rang avec 194,295 milliers ou 44.4 p.c. de sa totalité, le pin blanc arrivant en second lieu avec 150,455 milliers ou 34.3 p.c., toutes les autres essences représentant ensemble 21.3 p.c. de la totalité.

Production du bardeau.—Les tableaux XXXVII et XXXVIII sont consacrés au bardeau; l'un indique l'étendue de sa fabrication dans les différentes provinces et l'autre les essences de bois dont il est fait. Les statistiques indiquent une diminution en 1918 de 358,435 milliers sur la production de 1917, pour les mêmes raisons qui ont fait décroître la production de la latte. Le Colombie Britannique a fourni 81.2 p.c. de la production totale, Québec prend le second rang avec 9.4 p.c. et le Nouveau-Brunswick est troisième avec 6.4 p.c., toutes les autres provinces n'y contribuant que pour 3 p.c. La valeur moyenne, par millier, est montée de $2.79 en 1917 à $3.07 en 1918, soit une augmentation légèrement supérieure à 10 p.c. Entre toutes les essences servant à cette fabrication, le cèdre joue le rôle le plus important, s'attribuant 88.3 p.c. de la totalité, puis vient le pin blanc avec 6.9 p.c. et l'épinette avec 3.5 p.c. Si l'on considère isolément le bardeau de cèdre, on remarque que la Colombie Britannique, à elle seule, en a produit 2,048,738 milliers, soit plus de 87 p.c., Québec 6 p.c., et le Nouveau-Brunswick 4.6 p.c.

Terres boisées appartenant à des compagnies ou particuliers.—Le tableau XXXIX indique, pour chaque province, la superficie approximative des terres boisées non exploitées, la quantité de bois sur pied qu'elles contiennent et sa valeur. Ces statistiques concernent exclusivement les forêts possédées en vertu d'un titre de propriété définitif, absolu; elle n'embrassent ni les terres boisées possédées à titre précaire, c'est-à-dire en vertu d'un bail ou d'une concession de bois, non plus que les immenses étendues couvertes d'arbres ayant une réelle valeur commerciale, mais non considérées comme forêts. On y voit que ces forêts couvrent une superficie totale de 27,118,741 acres, contenant environ 88,281,249 mille pieds de bois debout, évalués à $143,240,913; en 1917 cette superficie était estimée à 19,289,094 acres, le volume du bois sur pied à 54,317,308 mille pieds et sa valeur à $122,501,539; en 1918 on estime que chaque acre de terre boisée contient environ 3.25 mille pieds, au lieu de 2.82 m.p. en 1917. Aux chiffres de 1917, ce bois valait $2.25 par m.p., tandis qu'en 1918 sa valeur est descendue à $1.62 par m.p. La province de Québec est la plus riche, tant au point de vue de l'étendue de ses forêts que de leur richesse, Ontario occupe le second rang au point de vue de la superficie et le troisième par rapport au volume du bois, le Nouveau-Brunswick occupe le troisième rang au point de vue de la superficie et le quatrième par rapport au volume, enfin la Colombie Britannique est quatrième en superficie et deuxième en volume du bois. Quant aux autres provinces, au point de vue de leurs surfaces boisées, elles se placent dans l'ordre suivant: Nouvelle-Ecosse, Manitoba, Alberta, Saskatchewan et île du Prince-Edouard; mais par rapport à leur richesse, l'ordre est légèrement modifié, le voici: Manitoba, Nouvelle-Ecosse, Alberta, Saskatchewan et île du Prince-Edouard.

Outre les terres boisées non encore exploitées dont nous venons de parler, le Canada possède 2,190,693 acres de terres boisées dans lesquelles des coupes ont déjà été pratiquées, ou bien qui ont été ravagées par les incendies; on en estime la valeur à $4,028,211 soit en moyenne $1.84 par m.p.

Matières premières, billes, billots, etc.

Le tableau XL contient les statistiques des matières premières employées dans cette industrie, par provinces, ainsi classifiées:

Billots coupés dans les terres boisées de l'industriel recensé; billots de bois de sciage, billes à bardeaux, etc., achetés; bois en grume acheté pour être travaillé; autres matières premières, y compris poteaux, pieux et traverses de voies ferrées, etc., et frais de transport sur toutes ces matières livrées aux scieries ou entrepôts de bois.

Le coût total des matières premières employées durant l'année, s'est élevé à $45,742,557, comprenant: billots de sciage, à concurrence de $33,667,084; billes à bardeaux, valant $4,967,804; bois en grume acheté valant $1,801,224; poteaux, traverses, etc., valant $4,327,486; enfin frais de transport s'ajoutant au prix d'achat $978,959. Le coût de ces matières premières en 1918 représentait 31·26 p.c. de la valeur des produits ouvrés, au lieu de 35 p.c. en 1917, cette différence étant attribuable à la hausse des cours de ces produits.

Ce pourcentage varie de province à province; en Colombie Britannique il est de 33·92; dans Québec 27·88; dans Ontario 22·54; au Nouveau-Brunswick 11·58; en Nouvelle-Ecosse 2·63; en Saskatchewan 0·67; au Manitoba 0·42; dans l'Alberta 0·22 et dans l'île du Prince-Edouard 0·13.

Capitaux

Le tableau XLI est consacré aux capitaux placés dans cette industrie; ses données sont classifiées sous trois rubriques: (1) terrains, bâtiments, machinerie et outillage des (*a*) chantiers de coupe de bois et (*b*) scieries, fabriques de bardeaux et de lattes; (2) matières premières, stocks en voie de fabrication, produits finis et approvisionnements divers en main; et (3) fonds de roulement, comprenant caisse, factures et billets à recevoir.

On constate qu'en l'année 1918, l'industrie du bois a absorbé un capital de $182,254,740, ce qui est une augmentation sur 1917 de $32,988,721, ou approximativement 22 p.c. Les capitaux placés dans les chantiers de coupe de bois sont passés de $24,102,445 en 1917 à $36,616,522 en 1918, augmentant donc de 50 p.c. Dans les scieries et manufacture, ces capitaux qui représentaient $48,545,792 en 1917 s'élèvent à $54,225,840 en 1918, soit une augmentation de 12 p.c.; les matières premières en stock, le bois en cours de fabrication, etc., qui valaient $44,788,359 en 1917 sont évalués à $55,059,898 en 1918, soit un accroissement de 23 p.c. Enfin les fonds de roulement qui figuraient en 1917 pour $31,829,423 sont portés en 1918 à $36,352,480, soit une augmentation de 14 p.c. Nous donnons ci-dessous un résumé, par provinces, des capitaux absorbés, tant en 1917 qu'en 1918.

COMPARAISON DES CAPITAUX EN 1917 ET 1918

Provinces		Terrains, bâtiments, machinerie et outillage		Matières en stock ou en voie de fabrication	Fonds de roulement, caisse, factures et billets à recevoir	Total des capitaux
		Dans les chantiers	Dans les scieries			
		$	$	$	$	$
Canada	1917	24,102,445	48,545,792	44,788,359	41,829,423	149,266,019
	1918	36,616,522	54,225,840	55,059,898	36,352,480	182,254,740
Alberta	1917	178,307	377,833	353,580	178,335	1,088,055
	1918	74,925	184,328	153,800	55,421	468,534
Colombie Britannique	1917	7,909,267	17,828,138	7,700,707	8,410,607	41,848,719
	1918	5,858,862	16,234,726	10,911,316	9,403,544	42,408,448
Manitoba	1917	302,515	701,306	687,803	724,543	2,416,167
	1918	134,772	828,605	719,295	898,567	2,581,239
Nouveau-Brunswick	1917	2,039,279	7,286,238	6,805,338	5,052,473	21,183,328
	1918	8,058,804	4,391,957	7,283,567	5,621,527	25,356,855
Nouvelle-Ecosse	1917	2,174,225	3,951,724	1,389,109	1,353,300	8,865,356
	1918	1,797,024	1,518,165	1,144,658	598,109	5,057,956
Ontario	1917	6,547,999	9,788,674	18,380,842	9,567,330	43,884,845
	1918	6,697,923	10,527,006	18,846,365	10,791,050	46,862,344
Ile du Prince-Edouard	1917	4,400	108,750	6,400	7,952	127,502
	1908	13,100	101,875	9,025	11,290	135,290
Québec	1917	4,888,771	8,456,198	8,558,105	5,621,035	27,551,019
	1918	13,849,405	20,153,062	15,031,084	8,168,269	57,201,820
Saskatchewan	1917	57,684	446,931	882,565	913,848	2,301,028
	1918	131,707	282,235	934,922	800,245	2,149,109

Personnel, appointements et salaires

Employés, commis, vendeurs, etc.—On trouve dans le tableau XLII pour chaque province, et pour le Canada, le nombre des employés de l'industrie du bois de construction, recevant des traitements ou appointements, et leur classification par catégories et par sexe. Seules, les provinces de l'Alberta et de la Nouvelle-Ecosse présentent des diminutions dans les traitements et appointements payés en 1918, par rapport à 1917. Dans toute la Puissance, on remarque que le nombre des employés, commis, etc., s'est accru en 1918 de 409 personnes et que les traitements et appointements de ce personnel ont augmenté de $592,580. On trouve ci-dessous un état comparatif entre les années 1917 et 1918 du nombre de ce personnel des deux sexes et de leurs traitements et appointements.

TABLEAU COMPARATIF DES APPOINTEMENTS EN 1917 ET 1918

Provinces.	1917			1918		
	Employés		Total des appointements	Employés		Total des appointements.
	Hommes	Femmes		Hommes	Femmes	
	nombre	nombre	$	nombre	nombre	$
Canada	**2,874**	**285**	**4,781,300**	**3,287**	**281**	**5,373,880**
Alberta	48	1	38,070	20	1	20,760
Colombie Britannique	762	103	1,396,213	643	104	1,406,647
Manitoba	40	1	54,440	36	5	67,759
Nouveau-Brunswick	430	55	545,42	336	56	589,606
Nouvelle-Ecosse	201	10	153,419	122	15	91,551
Ontario	726	72	1,460,007	912	64	1,824,903
Ile du Prince-Edouard	1	—	1,000	2	—	2,200
Québec	627	36	1,055,379	1,175	30	1,289,593
Saskatchewan	39	7	77,348	40	6	78,461
Yukon	—	—	—	1	—	2,400

Ouvriers et journaliers.—Les ouvriers, manœuvres et journaliers travaillant tant dans les chantiers de coupe de bois que dans les scieries, font l'objet du tableau XLIII. Depuis 1917 le nombre des bûcherons, flotteurs, etc., s'est accru de 2,560 personnes et celui des ouvriers des scieries et manufactures d 1,430, soit une augmentation totale de 3,990 travailleurs dans cette industri[e]

pour toute la Puissance. On constate également que les salaires de la main-d'œuvre ont avancé pendant l'année de $9,999,831, somme qui représente une augmentation de plus de 29 p.c. Le résumé ci-dessous établit une comparaison entre les années 1917 et 1918, tant pour le Canada que pour chacune des provinces, du nombre de la main-d'œuvre ouvrière et de sa rémunération.

TABLEAU COMPARATIF DES OUVRIERS ET DES SALAIRES EN 1917 ET 1918

Provinces	Ouvriers, en 1917		Ouvriers, en 1918		Augmentation ou diminution	
	Nombre	Salaires	Nombre	Salaires	Nombre	Salaires
		$		$		$
Canada	**53,313**	**34,412,411**	**57,303**	**44,412,242**	**3,990**	**9,999,831**
Alberta	328	258,864	240	174,177	— 88	— 84,687
Colombie Britannique	13,879	11,046,370	13,268	13,621,118	— 611	2,574,748
Manitoba	795	470,781	911	641,338	116	170,557
Nouveau-Brunswick	6,539	3,574,275	6,551	4,015,781	12	441,506
Nouvelle-Ecosse	2,994	1,240,246	2,478	1,146,240	— 516	— 100,006
Ontario	16,447	10,115,652	16,804	12,926,710	357	2,811,058
Ile du Prince-Edouard	67	25,356	53	28,511	— 13	2,655
Québec	10,840	6,708,709	15,711	10,740,644	4,871	4,031,940
Saskatchewan	1,424	965,663	1,282	1,113,938	— 142	148,276
Yukon	—	—	5	3,784	5	3,784

Le signe moins (—) in lique une diminution.

Il résulte de l'exposé qui précède que, si les provinces de la Colombie Britannique, de l'île du Prince-Edouard et de la Saskatchewan ont restreint le nombre de leurs ouvriers, elles ont eu, néanmoins, à subir une augmentation considérable du total des salaires payés. Dans les provinces du Manitoba, du Nouveau-Brunswick, d'Ontario et de Québec, il y eut augmentation tant du nombre de la main-d'œuvre que de ses salaires. Dans l'Alberta et la Nouvelle-Ecosse, on remarque une diminution qui affecte tout à la fois et le nombre des ouvriers et leurs salaires; enfin le Yukon figurant pour la première fois dans ce tableau aucune comparaison n'est possible avec l'année précédente. C'est dans la province de Québec que l'industrie a été le plus florissante en 1918, les salariés ayant augmenté de 4,871 personnes, et les salaires de $4,031,940.

Personnel occupé par mois.—Le tableau XLIV nous renseigne, mois par mois, sur le nombre du personnel occupé, dans chacune des provinces et pour toute la Puissance. On y voit qu'en ce qui concerne les travaux effectués en forêt, les mois de plus grande activité sont compris entre novembre et mars, que le flottage sur les cours d'eau s'opère principalement d'avril à juin et que les scieries emploient le plus grand nombre d'hommes de mai à août. Pour l'année entière, le nombre moyen des ouvriers occupés à l'abattage et au transport du bois fut de 26,954 hommes, soit une augmentation de 2,560 sur 1917 ou un peu plus de 10 p.c.; dans les scieries cette moyenne pour l'année fut de 30,349 hommes, soit une augmentation de 1,560 sur 1917 ou approximativement 5 p.c.

Durée des opérations.—Le travail dans les scieries est analysé dans le tableau XLV, qui nous indique pendant combien de journées entières, ou de fractions de jour, elles ont travaillé, pendant combien de jours elles sont restées inactives et enfin la durée du travail par jour et par semaine. Les scieries de la Colombie Britannique ont travaillé pendant 210·41 jours sur un total de 304 jours, celles de Québec durant 152·56 jours et celles de la Saskatchewan 138 jours. Pour l'ensemble du Canada, la moyenne s'établit à 114 jours environ de travail et 190 jours de fermeture. La moyenne de la durée du travail, pour tout le pays est de 9·4 heures par jour et de 56·2 heures par semaine; ces chiffres sont à peu près ceux de toutes les provinces.

Consommation de combustible.—Il résulte des chiffres compilés dans le tableau XLVI, présentés pour l'ensemble du Canada et pour chaque province, que toutes les scieries du Dominion réunies ont consommé, durant l'année, 94,334 cordes de bois évaluées à $272,327, plus 25,995 tonnes de charbon évaluées à $198,233, ainsi que $40,928 de pétrole, $33,131 de gazoline et enfin $47,887 d'autres combustibles, comprenant le coke, le gaz naturel, etc., formant au total une somme de $592,506 de combustible, au lieu de $585,446 en 1917. La valeur des déchets, tels que dosses, rognures et sciure de bois n'est pas comprise dans la somme ci-dessus.

Force motrice.—La force motrice mise au service de l'industrie du bois de construction est divisée, dans le tableau XLVII, en deux catégories: celle produite et celle louée. La force motrice produite se subdivise ainsi: vapeur 2,516 unités, susceptibles de développer 192,997 chevaux-vapeur, mais ayant produit effectivement 175,639 chevaux-vapeur; roues hydrauliques et turbines, avec 93 unités, capables de fournir 41,041 chevaux-vapeur, dont 36,009 chevaux-vapeur effectivement utilisés; moteurs électriques, avec 390 unités d'une force totale de 18,577 chevaux-vapeur, dont 15,805 utilisés; moteurs à gaz avec 112 unités, d'une force de 7,046 chevaux-vapeur, dont 6,733 effectivement utilisés et moteurs à gazoline avec 186 unités d'une force de 3,601 chevaux-vapeur, dont 3,364 effectivement utilisés; enfin toutes autres forces motrices mises en œuvre par 111 machines, de la force de 3,893 chevaux-vapeur, dont 3,523 utilisés.

La force motrice louée était transmise par 476 moteurs, de la force de 14,668 chevaux-vapeur dont 11,653 effectivement utilisés et 23 autres non spécifiées, de la force de 712 chevaux-vapeur, dont 601 chevaux-vapeur utilisés. Pendant l'année, il a été payé une somme de $134,275 pour l'achat de force motrice, soit à raison de $8.73 par cheval-vapeur potentiel et $10.96 par cheval-vapeur effectivement employé.

Frais généraux

Les frais généraux encourus pendant l'année 1918, sont détaillés dans le tableau XLVIII, pour chaque province. La dépense la plus considérable est représentée par le loyer des bureaux, les primes d'assurances et autres dépenses diverses, qui se sont élevées à $7,651,967; le travail donné à forfait a coûté $7,360,291; les provisions pour la nourriture des hommes et des chevaux, $5,946,730; les taxes et impositions $1,448,352; le loyer de manufactures $299,792 et l'achat de force motrice $134,275, formant un grand total pour la Puissance de $22,841,407, en augmentation de $4,926,239, sur l'année 1917, ou 27·5 p.c.

Importations et exportations

La valeur des produits forestiers importés au Canada, au cours de l'année 1918, s'est élevée à $11,999,940, dont $380,338 de billots et $11,619,602 d'autres bois non ouvrés; plus de 99·5 p.c. de ces importations viennent des Etats-Unis. D'autre part, les rapports du commerce indiquent que les exportations des produits des forêts canadiennes pendant la même année 1918 avaient une valeur de $65,372,236, comprenant $547,351 de billots et $64,824,885 d'autres bois non ouvrés; plus de 86 p.c. de ces exportations sont allées aux Etats-Unis.

[No. 17b—1921]—1

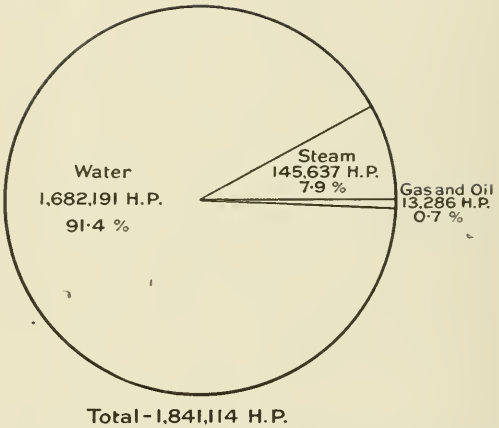

FIG. 1. *Central Electric Stations.—Primary Power by character of Power (not including the 117,528 h.p. installed in auxiliary fuel plants) 1918.*

CANADA

DOMINION BUREAU OF STATISTICS

CENSUS OF INDUSTRY, 1918

CENTRAL ELECTRIC STATIONS IN CANADA

(Prepared in collaboration with the Dominion Water Power Branch, Department of the Interior, with the assistance of the Ontario Hydro-Electric Power Commission, the Quebec Streams Commission, the New Brunswick Water Power Commission and the Nova Scotia Water Power Commission)

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

CENSUS OF INDUSTRY, 1918.

CENTRAL ELECTRIC STATIONS.

PREFACE.

The statistics in this report on the central electric station industry of Canada have been collected and compiled in accordance with a co-operative arrangement under the Statistics Act between the Dominion Bureau of Statistics and the Dominion Water Power Branch, Department of the Interior, with the assistance of the Ontario Hydro-Electric Power Commission, the Quebec Streams Commission, the New Brunswick Water Power Commission and the Nova Scotia Power Commission. The returns were collected by the Dominion Bureau of Statistics with the assistance of the provincial organizations named, and the report herewith has been prepared under the Statistics Act by Mr. J. T. Johnston, Assistant Director of Water Power, assisted by Mr. N. E. D. Sheppard, engineer of the Dominion Water Power Branch. The cordial thanks of the Bureau are tendered to the organizations co-operating as above described.

The report includes only stations engaged in the distribution and sale of electrical energy and excludes electrical power developed by individual organizations for their own direct use.

The results disclosed in the accompanying report provide convincing evidence of the extensive development of one of our most important industries, and indicate that Canada's water-power resources have been a leading factor in such development. The results of a special census of the developed water-power of Canada have recently been compiled. From these results it is shown that the central electric station industry employs 72.7 per cent of the total water-power developed in the Dominion.

The considerable difficulty experienced in securing complete reports from a number of stations during the 1917 census has been practically elimated, as a result of the better understanding and appreciation on the part of the companies furnishing the information, of the purpose of the census. It is thought that the present report is as complete and accurate as the intricate nature of the industry permits, and that it will provide a final basis of comparison in future reports.

R. H. COATS
Dominion Statistician.

Dominion Bureau of Statistics,
Ottawa, May 29, 1920.

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THE CENTRAL ELECTRIC STATION INDUSTRY OF CANADA, 1918.

INTRODUCTION AND SUMMARY.

The first detailed statistical analysis of the central electric station industry in Canada was published in connection with the census of industry for the year 1917, and in it were presented to the public, in a manner not hitherto attempted, the principal features of the status and development of the industry as to January 1, 1918. The introduction of that report referred to the comparatively short history of the central electric station industry and its subsequent extraordinarily rapid development since the first power stations were placed in operation in the years 1881 and 1882. However a full realization of the present day dependence of industrial and domestic life upon the supply of electrical energy can only be gained through a study of statistics such as are presented in this report.

This second analytical census report of the central electric station industry is complete to January 1, 1919, and shows a decided activity in the development of power for domestic and commercial lighting and power purposes. This activity is evidenced by the installation of additional units and the replacement of old equipment by more efficient units in existing generating stations; by the reorganization and changes in ownership of existing stations; by the extension of distribution systems; and more particularly by the large additional capacity contemplated in connection with power plants at present in operation. Apart from the present census returns a further evidence of the ever-increasing advance in the generation and distribution of electrical energy for public and private service is to be found in the large number of generating stations now actually under construction throughout Canada and the prospective developments contemplated for the near future.

Of the plants at present under construction the more important are the Chippawa-Queenston, Nipigon and High Falls water-power developments of the Hydro-Electric Power Commission of Ontario; the Drummondville water-power development of the Southern Canada Power Company, and the Chaudiere Falls development of the Ottawa and Hull Power and Manufacturing Company in Quebec; the Northeast and Indian River Development of the Nova Scotia Power Commission near Halifax, in Nova Scotia, and the Great Falls development of the Winnipeg River Power Company in Manitoba. The aggregate ultimate designed capacity of these developments is 587,600 horse-power. In addition, there are numerous smaller hydraulic and fuel power developments in the course of construction, notably at Lawrencetown, in Nova Scotia; at Hampton, in New Brunswick; at River du Loup and Armagh, in Quebec, and at Lloydminster, in Saskatchewan.

Scope and Character of the Present Report.

The census definition of the term central electric station is a station which sells or distributes electrical energy for lighting, heating or general power purposes. Central electric stations may be classed under two characteristic heads: those which generate their own power and those which do not generate any power, but purchase a block from some other station for the purpose of reselling the same. Under this definition each generating plant in a system and each separate organization distributing electrical energy is listed as a separate station.

In a considerable number of cases the central electric station operations are conducted in conjunction with some other industry, such as electric railways, mining, pulp and paper, etc., and in many instances the primary power units of small lumber and grist mills are utilized to supply power for lighting service at night. The relation of the central electric station activities of such composite cases to the entire operations varies greatly; in some instances the supply of electrical energy is only incidental to the main operations, while in other instances the central station operations form the major activities. In each case where the central electric station operations are combined with those of some other industry special requests were made for a careful segregation in the census returns of all data pertaining to the central station operations. The data was then carefully checked with information from all available sources in order to eliminate, as far as possible, any error arising from the inclusion of statistics properly chargeable to the other industry.

The statistics therefore deal only with the central electric station industry. Companies engaged in mining, electric railway operations, pulp and paper, lumber and other manufacturing, which incidentally distribute electrical energy for use outside of the company's own operations, are each classed as a central electric station in so far as it distributes electrical energy. On the other hand, companies generating electrical power for the sole purpose of carrying on the industry in which they are engaged are not included in this census.

In a number of instances of central stations operated in conjunction with electric railways, pulp and paper manufacturing, and mining, the power operations are carried on by a distinct organization for which separate accounts, etc., are maintained, the power department or subsidiary organization being credited with the value of the energy supplied to the allied industry. In such cases the entire power development comes under the census classification of a central electric station and is therefore included in this report in its entirety.

Some idea of the complexity of the central electric station industry resulting from the adaptibility of electrical energy to long distance transmission, may be formed from the following details of the more complicated systems existing in Canada.

Certain of the large power companies not only generate power for sale, but also purchase blocks of power from other distributing companies and in turn sell blocks of power to various other central electric stations. In one instance the company operates its own power plant; operates under agreement the plant of another organization; operates an extensive system of transmission lines; sells electrical energy as well as mechanical energy direct to consumers; sells blocks of power to its subsidiary companies, some of which in turn operate their own generating station; and also sells power in bulk to other independent central electric stations. In this particular instance power is sold in bulk to companies operating large distribution systems nearly as complex as the one under consideration. Another somewhat different system includes a number of subsidiary companies each operating a generating station and each supplying practically its entire output to the parent company, which acts as a distributing company, selling power not only direct to consumers, but also in bulk to other central electric stations. In Ontario the Hydro-Electric Power Commission's systems presents another outstanding case of the inter-connection of central electric stations. The general framework of the system, embracing the generating station and transmission lines operated by the provincial commission, the purchasing of blocks of power from other central stations and the distribution of power to local municipal commissions, is well known and does not require further detail here. Each individual local municipal system constitutes a separate central electric station, mostly of the non-generating type, the exceptions being those operating generating plants as well as purchasing power from the provincial commission. Another complex case is presented by a company operating two distinct systems; purchasing all the energy used in connection with one system and generating part of the energy distributed over the second system.

To supply the first system this company purchases the entire output of the two plants operated by a subsidiary company and also purchases a large proportion of the output of another separate and independent organization. For the second system this company operates a generating station and also purchases the entire output of a plant operated by its subsidiary company.

Apart from this inter-connection of stations which, while complex, nevertheless pertains entirely to central electric station operations, there are also the numerous instances of these operations being carried on in conjunction with those of other industries.

The foregoing serves to illustrate the difficulties of securing a clear-cut analysis of the station returns.

The total number of central electric stations reported in this census is greater than that reported for 1917. The increase is not entirely due to new developments but partially to the addition of stations in existence during 1917 concerning which information was received at too late a date for inclusion in the previous report. A more thorough understanding of the organization of some of the larger and more complicated stations has also made possible the individualizing of a number of stations of which the statistics had in last year's report been included in one central controlling organization.

The equipment details of each central station with other pertinent data were published in the *Directory of Central Electric Stations in Canada issued as Part II of the Census of Central Electric Stations for 1917. The directory is complete to January 1, 1919, and will be revised and published periodically; additions contained in this statistical report, together with subsequent changes will be included in a future issue.

The statistics are compiled and analysed in such a manner as to facilitate comparison between stations owned by commercial or private organizations and those owned by municipalities or other governmental commission; between stations operated by hydraulic power and those operated by fuel power; and between stations generating electrical energy and those buying a block of power for resale. The municipal stations include not only municipally-owned systems but also those operated by provincial commissions and the Federal Government. The commercial stations are those owned by private corporations, partnerships and individuals. In the statistics of hydraulic power stations are details of the auxiliary power plants as well as the actual water-power developments and relative data. The fuel power stations include those stations whose only source of power is derived from fuel-using prime movers, namely steam-engines, steam-turbines, gas-engines and oil-engines. The subdivisions of generating and non-generating embrace respectively, all stations operating generating plants and those whose only source of power is that generated by some other central electric station.

More details of the primary power equipment of the auxiliary and stand-by fuel power plants have been incorporated in this year's report. These auxiliary plants contain a considerable aggregate primary power installation representing a large capital expenditure. Since these plants are with one exception supplemental to hydraulic power developments and since the financial statistics proportionately chargeable to the power supplied by these plants is not separable with any reasonable degree of accuracy from those of the main plant, the statistics of their power equipment has been tabulated separately under the caption Auxiliary Plant Equipment and are not included in any totals except where specifically stated to the contrary. The financial statistics relative to these auxiliary and stand-by plants are, however, included with those of the main plants to which they are auxiliary.

* Copies of the Directory of Central Electric Stations in Canada may be secured by application to the Director of Water Power, Department of the Interior, Ottawa.

General Summary.

Summary of Principal Items.—Table 1 summarizes the results of the census of central electric stations, listing the principal items reported and drawing a comparison between commercial and municipal stations.

The total number of generating and non-generating stations reporting for the year ending December, 31, 1918, is 795, an increase of 129 over those reporting in the 1917 census. Of this total 515, or 64·8 per cent, generate their own power and 280, or 35·2 per cent, are of the non-generating type, while 377 are commercial or privately owned and 418 are municipally or publically owned. The excess in municipal stations is attributable to the non-generating type; 64·5 per cent of the generating type are commercial and 35·5 per cent municipal or public, while 16·1 per cent of the non-generating type are commercial and 83·9 per cent are municipal or public. It will be noted by reference to table 2 that the municipal non-generating stations of the province of Ontario accounted for 204, or nearly 73 per cent of the total non-generating stations in Canada. The large number of municipally owned non-generating stations in Ontario is largely due to the Hydro-Electric Power Commission of Ontario, which system includes 194 non-generating central stations.

The total capital invested in the central station industry is $401,942,402, of which $356,547,217 is invested in actual power development, including real estate, power plant and equipment, dams, penstocks, flumes and other hydraulic works, transmission and distribution systems, substations and receiving stations, and the balance, $45,395,185, represents miscellaneous supplies, cash, trading and operating accounts and bills receivable. Of the total, $288,151,605, or 71·7 per cent, is invested in commercial, and $113,790,797 or 28.3 per cent in municipal or public plants and systems.

The total revenue received from the sale of electrical energy for all purposes was $53,549,133, of which 31·7 per cent, or $16,952,512, was from power used for lighting purposes, and 68·3 per cent, or $36,596,621, from power used for all other purposes.

The total revenue received by commercial stations was $33,190,882; for lighting, $8,638,648, or 26 per cent, and for all other purposes $24,552,234, or 74 per cent. Municipal stations received a total revenue of $20,358,251; for lighting, $8,313,864, or 40·8 per cent, and for all other purposes $12,044,387, or 59·2 per cent. The revenue received by commercial stations was 62·0 per cent of the total revenue received by all stations. With regard to the type of station, irrespective of ownership, the generating stations received a revenue of $42,201,435, and the non-generating stations $11,347,698. The latter amount, however, does not entirely represent the revenue received from the resale of energy purchased in bulk from other central electric stations, since there are a number of generating stations which purchase blocks of power, the revenue from which is combined with that received from the sale of power actually generated by the station.

The total operating expenses, which includes salaries, wages, fuel and such other miscellaneous expenses as rent of offices, mechanical power and electrical energy purchased, insurance, taxes, ordinary repairs to buildings and machinery, etc., for all stations was $30,265,864. Of this total the amount chargeable to the operation of commercial stations was $16,851,623, or 55·7 per cent, and to the municipal stations $13,414,241, or 44·3 per cent.

The commercial stations employed 5,690 persons, with salaries and wages amounting to $6,137,525, while the municipal stations employed 4,006 persons, at a total expense of $4,216,717. Included in the total operating expenses is $9,641,048 paid for electrical energy purchased in bulk for distribution. This energy is generated by central stations whose reports are included in the statistics and is sold to other central stations both of the non-generating and generating types. Of the total number of stations which purchase electrical energy in bulk from other central stations only 8·5 per cent are of the generating type. Yet this class of station purchases an amount almost equal to that purchased by the 280 non-generating stations, the amount paid

for such energy by non-generating stations being $5,076,452 and by generating stations $4,564,596.

The total primary power installation is listed for the main plants as 1,841,114 horse-power, and for the auxiliary and stand-by plants as 117,528 horse-power, or a grand total including all plants of 1,958,642 horse-power. This division has been maintained throughout the report, so that, excepting where definitely specified to the contrary, the figures for installed primary power do not include the auxiliary or stand-by equipment, the figures for these plants being listed separately. The summary of the total capacity of the different types of prime movers installed, together with the analytical tabulation of these units in the various tables of the report, provide complete data for the study of this particularly interesting branch of the statistics. It is notable that of the total main plant primary installation of 1,841,114 horse-power that derived from water is 1,682,191 horse-power, or 91·4 per cent; that from steam is 145,637 horse-power, or 7·9 per cent; and that from internal combustion engines is 13,286 horse-power, or 0·7 per cent.

The total generator capacity for the main plants is 1,433,722 kilovolt-amperes and for the auxiliary or stand-by plants is 91,811 kilovolt-amperes, making a total for all plants of 1,525,533 kilovolt-amperes.

Analysis of Stations.—Table 2 lists the number of central electric stations in Canada and by provinces according to ownership and type of station. This analysis presents some very interesting figures with respect to the development of the central station industry in the various provinces. Out of the total 795 stations reported there are 366, or 46·1 per cent, in Ontario; 149, or 18·8 per cent, in Quebec; 61, or 7·7 per cent in Saskatchewan; 60, or 7·5 per cent, in British Columbia; 53, or 6·7 per cent, in Alberta; 39, or 4·9 per cent, in Nova Scotia; 29, or 3·6 per cent in Manitoba; 25, or 3·1 per cent, in New Brunswick; 9, or 1·1 per cent, in Prince Edward Island; and 4, or 0·5 per cent, in the Yukon Territory.

The excess of stations in Ontario has already been partially discussed, but reference to column 5 of table 2 will show that it is not entirely due to the large number of non-generating stations, inasmuch as the province of Ontario leads in the number of generating stations also, reporting 150, or 29·1 per cent of the total of 515 generating stations in Canada. The province with the next highest number of generating stations is Quebec, with 114, or 22·1 per cent of the total.

The generating stations are further analysed as to source of power, 280 stations, or 54·4 per cent, deriving power from water and 235, or 45·6 per cent, from fuel.

Power Equipment per Capita.—The relation of the installed primary power and dynamo capacity to the population as presented in table 3, emphasizes to a marked degree the dependence which, in Canada, has been placed upon water-power for the development of the central station industry. Apart from the Yukon Territory, in which the limited population and small number of stations supplying large blocks of power for mining purposes does not permit of comparison with the provinces, the five provinces Alberta, British Columbia, Manitoba, Ontario, and Quebec deriving the greater portion of their central electric station power from water-power show on the aggregate an average installation of 249 horse-power per thousand population. On the other hand, the four provinces, New Brunswick, Nova Scotia, Prince Edward Island, and Saskatchewan, in which fuel-power plants are in the predominance have an average installation of only 41 horse-power per thousand population.

Population by provinces is the only feasible basis available for making a per capita analysis of the central station industry. The occupation of the population and its varying density in different localities have a direct bearing on the market for electrical power, and hence on the development of the central station industry. Consideration of these phases will assist in explaining the variations in the per capita development shown in table 3.

Primary Power Equipment.

As previously noted considerable details of the statistics of auxiliary and stand-by plant equipment have been incorporated in the tables of this report in view of the large installation reported for this type of plant and the corresponding large capital investment involved. It should also be noted that in the event of a shortage of power these auxiliary plants may in many instances be operated continuously, as was the case with a number of these stations during the year 1917, when the demand for power for the manufacture of munitions was insistent.

Summary of Power Equipment.—In table 4 are listed the totals for the Dominion and by provinces of the installed capacity of the different types of prime movers and of the electric generators. The results are tabulated to show the grand total capacity of all primary power units, the total capacity not including the units installed in auxiliary or stand-by plants, and the total auxiliary plant capacity; first, for all types of prime movers; second, for steam-engines and steam-turbines; third, for gas and oil engines, and fourth, for water-wheels and turbines, with a separate tabulation for electric generators for all types of stations. As the auxiliary and stand-by plants are essentially fuel using, the tabulation for water-wheels and turbines represents the capacity installed in principal plants only.

The aggregate installed capacity of all types of prime movers in central electric stations in Canada is 1,958,642 horse-power, of which 1,841,114 horse-power is principal plant installation and 117,528 horse-power is auxiliary or stand-by plant equipment. The total for steam-engines and steam-turbines is 262,562 horse-power, which includes 116,925 horse-power installed in plants operated as auxiliaries or stand-bys. In the same way the total gas and oil-engine installation, 13,889 horse-power, is divided for principal plants, 13,286 horse-power and for auxiliary plants 603 horse-power. The aggregate generator installation is 1,525,533 kilovolt-amperes of which 91,811 kilovolt-amperes is the capacity of machines installed in auxiliary plants. A similar tabulation of the installed capacity of the different types of units is given also by provinces.

The remarkable degree to which the water-power resources of the Dominion have already been utilized in the central electric station industry as compared with the use of fuel power (91·4 per cent of the total main plant primary installation being hydraulic power), is shown in graphical form by figure 1 (see frontispiece). The provincial totals of installed primary power are shown diagrammatically by figure 2, while figure 3 illustrates for each of the provinces the relation between the primary power derived from water and that from fuel.

Distribution and Kind of Primary Power Equipment.—Table 5 presents a comparison between the number of units and total capacity of the different types of prime movers installed in the main plants, giving the percentage that the total capacity of each type is of the total primary power installation. It is notable that for the Dominion the hydraulic installation is 91·4 per cent of the aggregate capacity of all units, and that in each of five of the ten provinces the water wheel and turbine installation is over 95 per cent of the total for that province. On the other hand the province of Saskatchewan derives all its power from fuel; 84·3 per cent from steam plants and 15·7 per cent from gas and oil plants. The low percentage of power from water reported for Nova Scotia, 18·5 per cent, should not be taken as reflecting the water-power resources of that province. With the completion of the hydro-electric developments at present under construction the proportion of power derived from this source will be greately increased. This table is of particular interest in that a clear conception of the provincial distribution of the different types of prime movers is obtained from a study of the percentage columns.

The distribution of the totals of each type of prime movers according to ownership is given in table 6. Of the total primary power units two-thirds were reported by commercial stations. The steam power units were reported in the proportion of 5

for commercial stations to 4 for municipal, with 57·5 per cent of the total power for these units in the former and 42·5 per cent in the latter type of station. The commercial stations show much larger percentages in the hydraulic power installation.

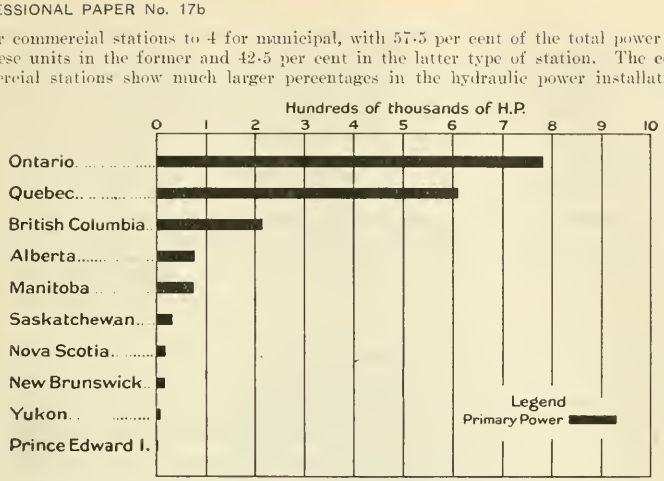

FIG. 2. *Central Electric Stations.—Total Primary Power by Provinces (not including the primary power equipment of auxiliary power plants) 1918.*

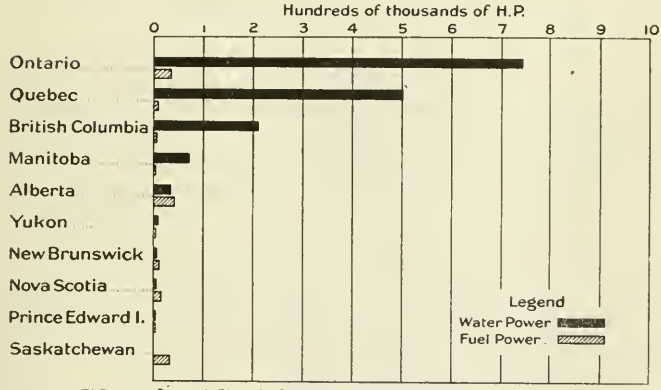

FIG. 3. *Central Electric Stations.—Water vs. Fuel Power by Provinces (not including the primary power equipment of auxiliary power plants) 1918.*

75·2 per cent of the units and 80·0 per cent of the horse-power being reported by these stations.

In a manner similar to that adopted in table 5, the number of units and installed capacity for commercial and municipal stations are compared with the total for all

stations in table 7. Of the aggregate main plant prime mover capacity, 1,841,114 horse-power, 77·9 per cent, or 1,434,196 horse-power is installed in privately-owned plants and represents the capacity of 673 units out of a total of 1,009. In Prince Edward Island and Yukon Territory 100 per cent of the central station power installation is privately owned. Following these districts come Quebec with 96·9 per cent, British Columbia with 94·0 per cent, New Brunswick with 87·3 per cent, Nova Scotia with 78·6 per cent, Ontario with 66·2 per cent and Alberta with 66 per cent. In Saskatchewan 95·8 per cent and in Manitoba 65·6 per cent is municipally or publically owned.

An interesting analysis of the number of generating stations by types of prime movers or combinations of different types of prime movers is presented in table 8. These figures are given for stations of private and public ownership. Out of a total of 515 generating stations, 122 contain steam-engines only, while 11 other stations contain steam-engines in conjunction with steam-turbines and 5 others contain steam-engines together with either gas or oil engines. Similarly 8 stations contain steam-turbines only; 11 have steam-turbines and steam-engines and 1 has steam-turbines used in conjunction with gas-engines. Summarizing the data in column 2 of this table it is seen that 133 stations contain steam-engines; 20 contain steam-turbines, 94 contain gas or oil-engines, and 280 contain water-wheels or turbines. Of the stations containing water-wheels or turbines 44 have auxiliary or stand-by plants, either supplementing their output or held in readiness in the event of breakdowns or other interruptions.

While reviewing the number of stations employing various types of prime movers it is of particular interest to further consider the average capacity of the stations and the average horse-power of the machines as presented by the analysis in table 9. The number of stations upon which the average capacity per station for the total power is based is the actual number of generating stations reporting, viz., 515, while the summation of the number of stations used in connection with the individual computations for the different types of machines is of necessity slightly greater than the actual number reporting, since a station having two different types of prime movers is listed twice.

The average capacity for the 515 stations reporting is 3,575 horse-power and the average horse-power for the 1,009 primary power machines in these stations is 1,825 horse-power. The average for commercial stations is 4,320 horse-power per station and 2,131 horse-power per machine, and for municipal stations, 2,224 horse-power per station, and 1,211 horse-power per machine, the municipal stations having on an average approximately one-half the capacity and containing units of slightly more than one-half the size of the average units in the commercial stations. Interesting facts are revealed by a study of these averages as applied to the different types of prime movers. For instance, the average capacity of the 280 hydraulic generating stations is 6,008 horse-power. Of these stations 205 are privately owned and have an average installation of 6,564 horse-power, while 75 are publicly owned and contain machines of an average capacity of 4,487 horse-power. On the other hand, the average capacity per station and per machine of the steam-power stations as listed is practically the same for municipal and for commercial stations. This is due to a large extent to the fact that a number of the larger steam-power plants of private ownership are operated as auxiliary plants to supplement hydro-electric power and as such are not included in the analysis presented in this table.

A comparison of the primary power installation in principal plants of the commercial and the municipal central electric stations is presented for the various types of prime movers in tables 10, 11 and 12, the first table listing the steam-engine and steam-turbine units, the second listing the gas and oil-engines and the third listing the water-wheels and turbines. The results show the number of units within certain capacity ranges and their aggregate rated horse-power capacity.

Table 10, which lists the steam-power units in groups according to the horse-power capacity of the units, shows clearly the limited field of the steam-engine and the

adaptability of the steam-turbine to the central electric station industry. The largest reciprocating steam-engine in use in the industry is of 2,250 horse-power capacity, while five steam-turbines of capacities ranging from 5,000 horse-power to 10,000 horse-power are in constant use and five others are installed in auxiliary plants. It is notable that of the total 218 steam reciprocating engines, 191, or 87·6 per cent, are rated under 500 horse-power and aggregate 33,869 horse-power, while of the 37 steam-turbines 21, or 56·8 per cent, are rated at over 2,000 horse-power and have a total capacity of 78,263 horse-power. The commercial stations contain a total of 121 steam-engines of an aggregate capacity of 32,025 horse-power and 20 steam-turbines with a total capacity of 51,715 horse-power, or 38·2 per cent of the total steam-power capacity of commercial stations is accounted for by the steam-engines and 61·8 per cent by the steam-turbines. This analysis according to capacity of prime movers is illustrated in graphical form by figure 4.

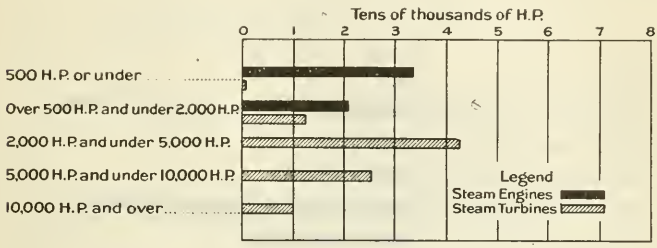

FIG. 4. *Central Electric Stations.—Steam Engines and Steam Turbines by Horse-power Capacity of Units (not including the primary power equipment of auxiliary power plants) 1918*

The internal combustion engine totals are listed in table 11, from which it is seen that the number of units installed in commercial and municipal plants is about equal, but that the installed horse-power of the municipal plants is 8,486 horse-power, as against 4,800 horse-power for commercial plants, or 63·9 per cent of the total. The use of this type of engine for central electric stations is not limited to any particular locality excepting in so far as the small capacity of the units provides such limitation. The province of Saskatchewan has 63 gas- and oil-engines, or 47 per cent of the total for the Dombinion.

Hydro Power in Central Station Industry.—Canada is exceptionally endowed with resources of hydro-power. Practically every great industrial centre is now served with hydro-electrical energy and has within easy transmission distance ample reserves of water-power. Active construction in hydro-electrical enterprise is fast linking up the few centres which are still unserved, and which have water-power resources in their vicinity. In view of the exceptional degree to which the central electric station industry in Canada has made use of water as the source of energy for primary power installation, an analysis of the statistics of this type of station is of special interest.

The comparison of the primary power installation of commercial and municipal hydraulic central electric stations is given in table 12. A study of this table is instructive in showing the distribution of the units between specified ranges of capacity. For instance, in both the commercial and municipal stations more than half the total installed capacity is represented by units of over 10,000 horse-power, or to be exact, 59·5 per cent in commercial stations and 55·9 per cent in municipal stations.

The total hydraulic installation of 1,682,191 horse-power is comprised of 620 units of an average capacity of 2,713 horse-power. While 258 of these units are of 500 horse-power or under, they contribute only 43,258 horse-power, or 2·6 per cent to the total. A total of 1,457,005 horse-power, or 86·6 per cent of the whole, is contributed by 186 units of 2,000 horse-power and over; 1,267,980 horse-power, or 75·4 per cent, by 119 units of 5,000 horse-power and over; 989,900 horse-power, or 58·8 per cent, by 74 units of 10,000 horse-power and over; and 318,500 horse-power, or 18·9 per cent, by 18 units of 15,000 horse-power and over. The commercial stations account for 466, or 75·2 per cent of the machines and 80 per cent of the total power. It might be noted in this connection that two additional units of 20,000 horse-power each have been installed in one of the Ontario publicly-owned plants during the year, but due to the fact that they were not placed in operation until 1919, they are not included in this analysis. Figure 5 gives diagrammatical presentation of the totals shown in table 12.

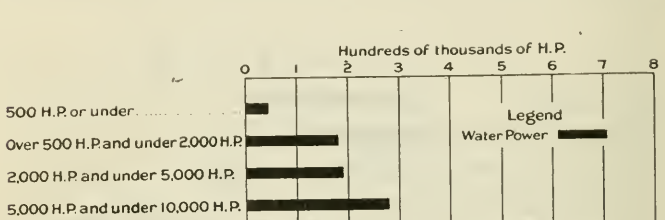

FIG. 5. *Central Electric Stations.—Water-wheels and Turbines by Horse-power of Units, 1918.*

A comprehensive summary of the statistics of the hydro-electric central stations is given in table 13, from which some idea may be gained of the important role played by this type of station. The statistics are limited solely to the central electric station industry and do not include any particulars respecting the vast industrial interests directly and indirectly dependent upon cheap hydro-power. The figures therefore represent the hydro-electric station foundation upon which a large proportion of the industrial activity of Canada is based. In view of this, the table is of special interest. The financial statistics refer to the reports of hydro-electric generating stations only and do not include the non-generating stations which buy power in bulk from hydro-electric stations.

The total water-wheel and turbine horse-power in hydro central stations is 1,682,191, or 91·4 per cent of the total equipment in principal central station plants and 85·0 per cent of the aggregate primary power of all prime movers, including the equipment of auxiliary and stand-by plants.

In connection with the 620 water-wheels and turbines there are installed for auxiliary or stand-by purposes 50 reciprocating steam-engines totalling 20,595 horse-power, 20 steam-turbines totalling 96,000 horse-power, and 5 gas- and oil-engines totalling 603 horse-power. Thus the total installed prime mover capacity of hydro-electric central stations, including the auxiliary plant machines, is 1,799,389 horse-power. The capital employed in these stations is $326,678,516 and the gross revenue derived from the power sold is $33,908,420, that received for power sold direct for lighting purposes being $5,765,526, and that for all other purposes $28,142,894.

Of the provinces, Ontario has the largest capital employed in hydro-electric stations of the generating type, accounting for $139,648,862, or 42·8 per cent of the total for this type of station in the Dominion; Quebec accounts for $130,682,260, or 40·0 per cent of the total, and the two provinces combined for 82·8 per cent of the total. Similarly 85·6 per cent of the total revenue reported by stations of this type was received by Ontario and Quebec combined.

The total dynamo capacity reported for hydro-electric stations is 1,301,224 kilovolt-amperes and for the auxiliary plants 91,636 kilovolt-amperes, representing an installation of 584 and 53 machines respectively. The average dynamo capacity per installed water-horse-power is 0·77 kilovolt ampere. The table gives in considerable detail the distribution of the primary power units by provinces according to size. The 56 hydraulic turbines of 10,000 horse-power and under 15,000 horse-power, with a total capacity of 671,400 horse-power, and the 18 turbines of 15,000 horse-power and over with a total capacity of 318,500 horse-power, form part of the noted installations of the large distributing companies in British Columbia, Ontario and Quebec, as do also the larger auxiliary plant installations listed for these provinces.

The foregoing discussion of the hydro-electric central stations is not complete without a reference to the ultimate designed capacity of the plants and to the additional installations at present under construction or contemplated for construction in the near future. This phase is particularly pertinent to this report in view of the fact that in a great many cases, particularly in respect to the larger power developments, the dams, head-works, power-houses and tail-races are so constructed as to permit of the ready installation of additional units with a minimum capital expenditure. In other words, the capital invested in the construction of the existing power stations includes the cost of permanent works for future installations. Table 14 lists by provinces the toal horse-power of water-wheels and turbines at present actually installed, the ultimate designed capacity of existing plants and the total contemplated capacity for new installations. It will be noted that the existing plants are designed for an ultimate capacity of 432,852 horse-power in excess of that already installed and that installations aggregating 135,755 horse-power are contemplated for the near future. The work of installing a number of these new units is at present well advanced.

Generating Equipment.

The statistics of generating equipment of the central electric stations are given separately for direct current and alternating current dynamos and are analyzed in much the same manner as the statistics for primary power equipment. The dynamos installed in auxiliary power plants are not included in the statistics, except where definitely noted. The total dynamo capacity reported is 1,433,722 kilovolt-amperes, which gives an average of 0·78 kilovolt-ampere per installed primary horse-power.

The total number of dynamos as given in table 15 is 990, which includes 141 direct current machines with a total capacity of 12,494 kilovolt-amperes and 849 alternating current machines with a total capacity of 1,421,228 kilovolt-amperes, representing 99·2 per cent of the total capacity of both types. It will be noted from the percentages given at the foot of this table that 78·8 per cent of the installed capacity of the direct current machines and 78·0 per cent of the capacity of the alternating current machines is in commercial stations, while 21·2 per cent and 22·0 per cent respectively represents the installation in municipal stations.

In table 16 are given the number of stations containing different types of dynamos. Of the 515 generating stations reporting, 81 contain direct current machines only, 421 contain alternating current machines only, and 13 contain both types of dynamos. Seventy-eight decimal six per cent of the total number of commercial stations and 87·4 per cent of the total number of municipal stations contain alternating current dynamos only.

The average capacity of generating machines per station and per machine is given in table 17. Dealing with the totals for both types of dynamos the average capacity per station is shown to be 2,784 kilovolt-amperes, the 332 commercial stations having an average capacity of 3,369 kilovolt-amperes and the 183 municipal stations 1,723 kilovolt-amperes. The average machine capacity for all stations is 1,448 kilovolt-amperes, while for commercial stations this average is 1,697 kilovolt-amperes and for municipal stations 953 kilovolt-amperes.

The notable feature of the average capacity comparisons given for direct current dynamos and alternating current dynamos in this table is the extremely low average shown for the direct current machines. This is due to the very limited use of the direct current dynamos in the central station industry.

Table 18 presents, for commercial and municipal stations, the number and kilovolt-ampere capacity of the dynamos by provinces. The analysis set forth in this table is comparable to that for the primary power machines as given in table 7. The percentages listed in columns six and seven in each of the tables are naturally very similar in the case of each province. A study of the average capacity of units installed in the different provinces, and in the stations of different ownership, should prove of interest. Referring to both table 7 and table 18, we find that in the province of Alberta, for instance, there are 84 prime movers, with a total capacity of 75,915 horse-power, or an average per machine of 903·7 horse-power, while the number of dynamos is 78, aggregating 58,193 kilovolt-amperes, or averaging 746 kilovolt-amperes per machine. On the other hand in British Columbia the average capacity of the primary power machines installed for central electric station purposes is 2,525 horse-power, and for dynamos is 1,519 kilovolt-amperes. The provincial totals of the installed dynamo capacity are shown in graphical form in figure 6.

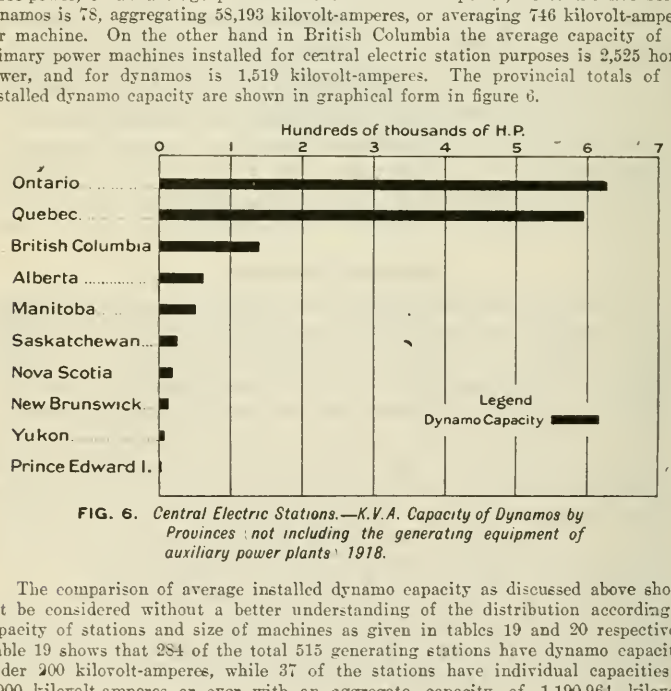

FIG. 6. *Central Electric Stations.—K.V.A. Capacity of Dynamos by Provinces (not including the generating equipment of auxiliary power plants) 1918.*

The comparison of average installed dynamo capacity as discussed above should not be considered without a better understanding of the distribution according to capacity of stations and size of machines as given in tables 19 and 20 respectively. Table 19 shows that 284 of the total 515 generating stations have dynamo capacities under 200 kilovolt-amperes, while 37 of the stations have individual capacities of 5,000 kilovolt-amperes or over with an aggregate capacity of 1,190,964 kilovolt-

amperes, or slightly over 83 per cent of the total dynamo capacity for all stations. Also the number of dynamos with capacities under 200 kilovolt-amperes is given in table 20 as 450 and for capacities of 5,000 and over as 93. The aggregate capacity of the machines in the latter group is 917,552 kilovolt-amperes, or 64 per cent of the total capacity for all dynamos. Thus it will be seen that the large generating stations operated to supply extensive distribution systems increase the average dynamo capacity per station and per machine to such an extent that a detailed analysis is essential if an intelligent idea of the whole situation is to be gained. The provincial distribution of the stations and machines according to capacity as presented in these tables provides a very interesting study.

For comparative purposes a summary of primary power equipment and generating equipment has been submitted in table 21. An interesting analysis of the installed dynamo capacity per installed primary horse-power may be made from this table. For the Dominion the statistics show an average of 77·8 kilovolt-amperes dynamo capacity for every 100 horse-power of installed prime movers. For the provinces of Ontario and Quebec the average is 80·5 kilovolt-amperes per 100 horse-power and for the other provinces it varies from 60·4 kilovolt-amperes to 97·6 kilovolt-amperes

Financial Statistics.

The conditions which tend to complicate an analysis of the central electric station industry were stated in the section dealing with the scope of the report and referred to in subsequent discussions of the various power equipment tables. It may be well, however, to review here the various important factors which require consideration in the interpretation of the financial statistics as compiled from the census returns.

The statistics treat solely with the central electric station industry and where some other industry is carried on by the organization reporting, every care has been taken to segregate as accurately as possible the data pertaining to the central electric station operations.

A great variety of industries are operated in conjunction with central electric stations. There are, however, two outstanding allied operations which must be given special consideration, namely, the supply of power for electric railways and for waterworks pumping stations. The former are mostly operated by commercial stations and the latter by municipal stations. In both cases the central electric station operations are at least equal in magnitude to those of the allied industry and therefore greatly differ from other composite stations where the sale of electrical energy is merely incidental. In a number of instances the electric railway and the power operations are carried on by separate organizations subsidiary to the same controlling organizations, thereby alleviating any difficulty in securing separate statistics. In other instances the electric railway is operated as a distinct department and as such is charged by the power department for the energy supplied. Under both of these conditions the whole power installation is used for central electric station purposes. There are, however, certain cases where the two operations are not separated, where the generating station contains special units for electric railway purposes. In these cases the statistics relative to the central electric station activities have been secured by careful estimates. The problem arising out of the combined operation of a central electric station and a waterworks pumping station is not so complicated as that presented by other composite stations since it is limited to municipalities, which in the main have separate departments for each of these activities, the power department receiving credit for the power supplied to the waterworks department. Thus separate financial statistics are available for the electric light and power department.

Where no cash income is derived from the current supplied for the purposes cited above and for municipal purposes such as lighting streets, parks and public buildings,

the actual revenue recorded for stations supplying such services has been augumented by an amount equal to the value of the energy furnished computed at prevailing rates.

Capital Invested in Central Electric Stations.—The total capital investment in the industry is shown in table 22, to be $401,942,402, of which commercial stations reported $288,151,605, or 71·7 per cent, and municipal stations $113,790,797, or 28·3 per cent. This total investment is given under the following two headings; real estate, buildings, hydraulic works, power station, substation and receiving station equipment and transmission and distribution equipment, $356,547,217; and cash and current assets including supplies and accounts and bills receivable, $45,395,185. These figures include not only generating stations but stations of the non-generating type.

Table 23 gives the total capital invested in the industry in each of the provinces and the average investment per installed primary horse-power and per kilovolt-ampere of the dynamos. These averages are computed for the installed capacity of the machines reported for the principal plants alone, and for the combined installations of both the principal and auxiliary plants. As previously stated it is obviously impossible to segregate the financial statistics rightly credited to the auxiliary plants so that the capital invested per unit power, including the auxiliary plant equipment provides the more logical basis of analysis. On the other hand the auxiliary plants in the majority of cases do not represent active power equipment but merely equivalent capacity held for emergency purposes.

The figures shown in this analysis are of particular interest in demonstrating the development of the industry in the various provinces as reflected by the capital investment. For the Dominion the average capital invested per installed primary horse-power, not including the prime movers of the auxilary plants, is $218, and based on the combined installation of both the principal plants and the auxiliary plants is $205. The provincial averages vary from $162 in British Columbia to $343 in the Yukon Territory. The provinces Ontario and Quebec show a remarkably similar investment per installed unit power.

Capital Invested in Hydro-electric Central Stations and Systems.—In table 24 is presented the capital invested in hydraulic power stations and non-generating stations which purchase their electrical energy from hydraulic power stations. Thus the capital invested in extensive distribution systems operated by numerous individual organizations but supplied by power purchased in bulk from some hydraulic generating station is all included in the totals in this table. These totals of capital invested should not be confused with those given in table 13, which represent only the capital reported by stations generating their own power from water. The total capital invested in these stations for the Dominion is $364,479,961, or 90·7 per cent of the total capital invested in all central electric stations in Canada. The average investment per installed water-horse-power is $217, or if the capacity of the fuel plants operated as auxiliaries to hydraulic plants is included, the capital invested per horse-power is reduced to $203. The provincial figures are of interest and show a marked relation of the capital invested in the two provinces which have the greatest development. British Columbia, which has third place in the development of water-power for central electric station purposes, has the least capital investment per installed water-horse-power. Figure 7 presents in graphical form by provinces the capital invested in water-power stations and in fuel-power stations and the total for both types of stations.

Revenue from Sale of Power.—Before considering the details of the revenue received from the sale of power as reported by the central electric stations it should be emphasized that these totals include the income received from the resale of the energy purchased in bulk by one central station from another central station and that in some cases the same energy supplies a revenue to as many as three separate stations before finally reaching the consumer. The revenue received from the second or third sale of the power is to a large extent segregated in tables 26 and 27 under the columns

for stations having no generating equipment, although not entirely, since a number of the generating stations buy power in bulk from other stations to augment their own supply.

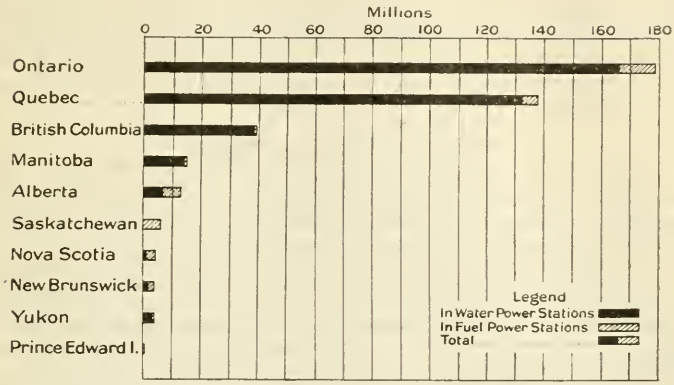

FIG. 7. *Central Electric Stations.—Capital Invested by Provinces, 1918.*

The returns as listed in table 25 show a total revenue for all stations in Canada of $53,549,133, of which 62 per cent was reported by commercial stations and 38 per cent by municipal stations. The census called for separate returns for power sold direct for lighting purposes and for power sold for all other purposes. Under this latter caption is included the income from bulk sales to other distributing companies which in turn reported their revenue under the two headings. The revenue from power sold for lighting was $16,952,512 and for all other purposes was $36,596,621, or 31·7 per cent and 68·3 per cent, respectively, of the total income from all power sold.

Table 26 presents the distribution of the revenue received for stations grouped according to dynamo capacity. The total gross revenue received from the sale of electrical energy by all central electric stations was $53,549,133. The stations with dynamo capacities under 200 kilovolt-amperes accounted for $1,278,799, of which $1,115,922 was from power sold for lighting purposes and $162,877 from power sold for all other purposes. Opposed to this the table gives the total revenue received by stations with dynamo capacities of 5,000 kilovolt-amperes and over as $30,978,872, of which $5,351,398 was derived from lighting and $25,627,474 from all other purposes. These figures, quoted for the generating stations grouped at either end of the table, show the principal market enjoyed by each class of station: the smaller stations deriving 87·3 per cent of their total revenue from energy sold for lighting and the larger stations receiving 82·7 per cent of their gross income from sales for general power purposes. Generating stations of intermediate sizes show a gradual change in their principal source of revenue. The non-generating stations, which reported 21·2 per cent of the total receipts for all stations in Canada, show a fairly equal participance in lighting and general power sales. It should be particularly noted in regard to the above comparison, that the revenue reported for the sale of power for all other purposes includes bulk sales to other central electric stations and that a part of such power is sold by the latter stations for lighting.

For analytical purposes a comparison between invested capital and gross income has been submitted in table 27 by provinces. The table lists the total for all stations

and for generating and non-generating stations separately. The stations operating their own generating plants reported an invested capital of $364,653,246, or 90·8 per cent of the total for all stations, and a gross revenue of $42,201,435, or 78·8 per cent of the total income secured. On the other hand the capital invested in stations which do not generate any of the power they distribute is $37,289,156 and the gross receipts reported by these stations is $11,347,698, which figure must provide for the purchase of the power. The extensive systems of non-generating stations in Ontario account for 71·0 per cent of the capital and 67·2 per cent of the revenue reported for all non-generating stations in Canada.

Employees, Salaries and Wages.

Separate returns were required for salaried employees and wage-earners. The census called for a division of the salaried employees under two classes: office superintendents and managers; and clerks, stenographers and other salaried employees. No division was asked for in the case of the wage-earners.

In considering the employees reported for the central electric station industry it was not deemed advisable to make any analysis according to work performed but merely to list the regular salaried employees and the wage-earners separately. The reason for this decision will be apparent when it is realized that in many of the smaller generating stations all the work is performed by one or two persons while the simplicity of the operation of many of the non-generating stations requires the service of only one employee. It should also be pointed out that in the operation of composite stations and municipally-owned stations the services of certain employees are frequently utilized for part of the time on work not at all connected with the central electric station. In the case of part-time employees only that part of their salaries chargeable to the central station operations has been included in the statistics.

In table 28 are given for each of the provinces the capital actually invested in power stations and transmission and distribution systems, the total investment representing "working capital," the number of salaried employees, the amount paid in salaries, the number of wage-earners and the total wages paid. The number of wage-earners listed here is the average number employed during the year, whereas the number shown in table 32 is the number on the pay roll on December 15. The amount invested in land, buildings, hydraulic works, power equipment and distributing systems and equipment for all stations was $356,547,217, of which $157,712,233 or 44·3 per cent, was reported by stations in Ontario, $118,015,571 or 33·1 per cent in Quebec, and $37,441,624 or 10·5 per cent in British Columbia. The capital invested in plants and systems for these three provinces aggregates $313,169,428, or 87·9 per cent of the total for the Dominion.

The statistics presented in table 29 are for the number of salaried employees on December 15, 1918, or on the nearest representative day, with the total salaries paid. By the arbitrary choice of this date, with the provision for the station reporting to vary the date according to local conditions, it is found that the statistics represent as nearly as possible the normal employment during the year. The figures for wage-earners give the average number of persons for the year with the total amount paid in wages.

The total number of persons engaged in the central electric station industry in Canada was 9,696, with aggregate salaries and wages of $10,354,242. The commercial stations employ 5,690 persons at an expense of $6,137,525, or 58·7 per cent of the total employees at 59·2 per cent of the total salaries and wages for all stations. The table gives the salaried employees and wage-earners for all stations combined and for commercial and municipal stations separately.

Similar details of the number of employees, salaries and wages are given for each of the provinces in table 30. In accordance with the development of the industry as

noted by the statistics of power equipment and capital invested, the provinces of Quebec and Ontario together reported 76 per cent of the total persons employed by all central electric stations in Canada. Ontario employed 4,431, or 45·8 per cent; Quebec 2,943, or 30·3 per cent; British Columbia 634, or 6·5 per cent: and the rest of the provinces from 4·5 per cent down to 0·3 per cent. The development of the municipality-owned stations in the province of Ontario is again emphasized in this table by the fact that 68.5 per cent of the total number of persons employed by this class of stations was reported in Ontario.

An interesting analysis of the number of persons employed and the amount paid in salaries and wages per installed primary horse-power and per installed kilovolt-ampere capacity of the dynamos is presented for each of the provinces in table 31. The province of British Columbia reported the lowest average number of employees, 2·9 per thousand horse-power, with an average of $3.94 per horse-power paid in salaries and wages. The combined statistics of the province of Alberta, British Columbia, Manitoba, Ontario and Quebec, which derive the bulk of their central electric station energy from water-power plants, show the average number of employees per thousand horse-power to be 5·0, with an average of $5.38 per horse-power paid in salaries and wages. The provinces of New Brunswick, Nova Scotia, Prince Edward Island and Saskatchewan, with a predominance of fuel-power plants reported an average of 11·4 employees per thousand horse-power and an average of $11.64 per horse-power on salaries and wages.

Table 32 includes only the wage-earners or persons paid on hourly, daily or weekly wage, who were on the pay-roll December 15, 1918. It also includes wage-earners who were on part time only as well as those engaged for the full day. It is the part time employees that cause the average weekly wage to appear low.

The table shows the number engaged at the different wage rates in each province and throughout the Dominion, and analyzes the returns according to sex and age. Of the total those under 16 years represent only 0·4 per cent and the female employees only 0·7 per cent; 27·4 per cent were paid over $25 per week, 29·8 per cent between $20 and $25 and 23·7 per cent between $15 and $20; of the total, 80·9 per cent were paid over $15 per week.

Table 33 shows the fuel used by stations that supplement their water-power in generating electrical energy with steam, gas or oil engines, during peak loads or dry periods, or use steam, gas or oil engines exclusively.

This table should not be considered by itself but in connection with table 4. Excluding the auxiliary plants which operate only part time, Alberta has the greatest horse-power capacity in steam, gas and oil engines, but due to the cheap gas, oil, lignite and bituminous coal in that province the cost of fuel is only $348,678 for 42,315 installed horse-power. Saskatchewan which generates all its power by fuel has a bill of $529,760 for 41,215 installed horse-power, while Ontario's cost of fuel is $556,698 for 35,992 horse-power installed in main plants, or 73,140 horse-power in both main and auxiliary plants. These variations are due to the nature of the fuel and freight charges added to the price at the mines. For example, the average price of lignite coal, as taken from this table, was $1.72 per ton in Alberta, $3.70 in Saskatchewan and $3.90 in Manitoba, and bituminous slack was $3 in Alberta, $4 in British Columbia, $5.90 in Saskatchewan and $6.15 in Ontario.

A general detail summary of the totals of all the principal items of the census has been consolidated in table 34. The statistics are given for the Dominion total, provincial totals, commercial stations totals and municipal stations totals. The totals for commercial and municipal stations are further subdivided into the three types of stations according to the source of power, viz., hydraulic generating, fuel generating, and non-generating stations.

The provincial and other totals included in this summary table give a comprehensive idea of the development of the central electric station industry throughout Canada.

TABLES—TABLEAUX

Summary—Résumé.

Table 1.—Principal Features of Statistics by Ownership.—
(Central Electric Stations, January 1, 1919.)

Tableau 1.—Principaux éléments des statistiques, par catégories d'usines.—
(Usines électriques centrales, 1er janvier 1919).

Summary. / Résumé	Total. / Total	Commercial / Usines commerciales	Municipal / Usines municipales	Percent of Total. / Pourcent. du total: Commercial / Commerciales	Municipal / Municipales.
Number of Stations—Nombre d'usines	**795**	**377**	**418**	**47·4**	**52·6**
With generating equipment—Munies de dynamos	515	332	183	64·5	35·5
Without generating equipment—Dépourvues de dynamos	280	45	235	16·1	83·9
Total Capital invested—Capitaux engagés	**401,942,402**	**288,151,605**	**113,790,787**	**71·7**	**28·3**
In Power Development, Transmission & Distribution—Dans les ouvrages et usines, la transmission et la distribution	356,547,217	250,591,215	105,956,002	70·3	29·7
In Miscellaneous Supplies, Cash Trading and Operating Accounts, and bills receivable—En approvisionnements et fonds de roulement	45,395,185	37,560,390	7,834,795	82·7	17·3
Total Revenue from sale of Power—Recettes provenant de vente d'électricité	**53,549,133**	**33,190,882**	**20,358,251**	**62·0**	**38 0**
For lighting purposes—Pour l'éclairage	16,952,512	8,638,648	8,313,864	51·0	49·0
For all other purposes—Pour tous autres usages	36,596,621	24,552,234	12,044,387	67·1	32·9
Total Operating Expenses—Dépenses d'exploitation	**30,265,864**	**16,851,623**	**13,414,241**	**55·7**	**44·3**
Salaries and wages—Traitements, appointements et salaires	**10,354,242**	**6,137,525**	**4,216,717**	**59.3**	**40·7**
Number of Persons Employed—Personnel employé, nombre	**9,696**	**5,690**	**4,006**	**58·7**	**41·3**
Fuel—Combustible	**2,626,132**	**1,505,732**	**1,120,400**	**57·4**	**42·6**
All other sundry expenses—Tous autres frais généraux	**17,285,490**	**9,208,366**	**8,077,124**	**53·3**	**46 7**
Total Horse Power—(not including auxiliary plant equipment). Chevaux-vapeur à l'exclusion de la machinerie des usines auxiliaires)	**1,841,114**	**1,434,196**	**406,918**	**77·9**	**22·1**
(1) Steam Engines and Steam Turbines—(1) Machines à vapeur et turbines à vapeur					
Number—Nombre	255	141	114	55 3	44·7
Horse Power—Force en chevaux-vapeur	145,637	83·740	61,897	57·5	42·5
(2) Waterwheels & turbines—(2) Roues hydrauliques et turbines					
Number—Nombre	620	466	154	75·2	24·8
Horse Power—Force, en chevaux-vapeur	1,682,191	1,345,656	336,535	80·0	20·0
(3) Gas and Oil Engines—(3) Moteurs à gaz et à pétrole—					
Number—Nombre	134	66	68	49·3	50·7
Horse Power—Force, en chevaux-vapeur	13,286	4,800	8,486	36·1	63·9
Dynamos—Dynamos—					
Number—Nombre	990	659	331	66·6	33·4
K.V.A. capacity—Capacité en K.V.A	1,433,722	1,118,438	315,284	78·1	21·9
Auxiliary Plants, Steam Engines and Steam Turbines, Gas and Oil Engines—Usines auxiliaires, Machines et turbines à vapeur, moteurs à gaz et à pétrole—					
Number—Nombre	76	56	20	73·7	26·3
Horse Power—Force, en chevaux-vapeur	117,528	110,853	6,675	94·3	5·7
Dynamos—Dynamos					
Number—Nombre	54	39	15	72·2	27·8
K.V.A. Capacity—Capacité en K.V.A	91,811	87,215	4,596	95·0	5·0

Table 2.—Number of Stations by Type and Ownership.
(Central Electric Stations, January 1, 1919).

Provinces.	Total	Total		Total	
		Commercial — Commerciales	Municipal — Municipales	Generating — Génératrices.	Non-generating — Non-productrices.
1	2	3	4	5	6
Canada	**795**	**377**	**418**	**515**	**280**
Alberta—Alberta	53	28	25	49	4
British Columbia—Colombie Britannique	60	37	23	50	10
Manitoba—Manitoba	29	11	18	24	5
New Brunswick—Nouveau-Brunswick	25	16	9	22	3
Nova Scotia—Nouvelle-Ecosse	39	25	14	35	4
Ontario—Ontario	366	109	257	150	216
Prince Edward Island—Ile du Prince-Edouard	9	9	–	8	1
Quebec—Québec	149	115	34	114	35
Saskatchewan—Saskatchewan	61	23	38	60	1
Yukon—Yukon	4	4	–	3	1

—Résumé.

Tableau 2.—Nombre d'usines, par genres et par catégories.
(Usines électriques centrales, 1er janvier 1919).

Generating — Génératrices		Non-Generating — Non productrices		Hydraulic — Hydrauliques			Fuel — A combustible		
Commercial — Commerciales	Municipal — Municipales	Commercial — Commerciales	Municipal — Municipales	Total	Commercial — Commerciales	Municipal — Municipales	Total	Commercial — Commerciales	Municipal — Municipales
7	8	9	10	11	12	13	14	15	16
332	**183**	**45**	**235**	**280**	**205**	**75**	**235**	**127**	**108**
27	22	1	3	4	3	1	45	24	21
32	18	5	5	30	22	8	20	10	10
10	14	1	4	4	3	1	20	7	13
15	7	1	2	8	6	2	14	9	5
22	13	3	1	13	6	7	22	16	6
97	53	12	204	115	75	40	35	22	13
8	–	1	–	6	6	–	2	2	–
95	19	20	15	99	83	16	15	12	3
23	37	–	1	–	–	–	60	23	37
3	–	1	–	1	1	–	2	2	–

Summary—Résumé.

Table 3.—Relation of Primary Power and Dynamo Capacity by Provinces.
(Central Electric Stations, January 1, 1919).

Tableau 3.—Relation entre l'énergie primaire et la capacité des dynamos, par provinces.
(Usine électriques centrales, 1er janvier 1919).

Provinces	Population	Number of Stations — Nombre d'usines			Primary Power — Energie primaire				K.V.A. capacity of dynamos — Capacité des dynamos en K.V.A.	
		Total	Commercial — Commerciales	Municipal — Municipales	Total Horse Power — Total ch.-vap.		Water Wheel or Turbine. H. Power — Ch.-vap. des roues hydrauliques ou turbines		Amount — Total	K.V.A. per 1,000 Pop. — K.V.A. par 1,000 hab.
					Amount — Total	H.P. per 1,000 Pop. — Ch.-vap par 1,000 hab.	Amount — Total	H.P per 1,000 Pop. — Ch.-vap par 1,000 hab.		
1	2	3	4	5	6	7	8	9	10	11
Canada	***8,835,000**	**795**	**377**	**418**	**1,841,114**	**209**	**1,682,191**	**190**	**1,433,722**	**162**
Alberta—Alberta	588,000	53	28	25	75,915	129	32,600	55	58,193	99
British Columbia—Colombie Britannique	718,000	60	37	23	217,184	302	211,043	294	138,225	193
Manitoba—Manitoba	619,000	29	11	18	75,142	121	71,790	116	50,961	82
New Brunswick—Nouveau-Brunswick	369,000	25	16	9	18,563	50	6,978	19	12,836	35
Nova Scotia—Nouvelle Ecosse	519,000	39	25	14	19,565	38	3,614	7	18,235	35
Ontario—Ontario	2,821,000	366	109	257	780,213	277	744,221	264	628,109	223
Prince Edward Island—Ile du Prince-Edouard	94,000	9	9	–	1,353	14	227	2	1,321	14
Quebec—Québec	2,326,000	149	115	34	611,744	263	601,718	259	492,467	212
Saskatchewan—Saskatchewan	754,000	61	23	38	31,215	41	–	–	27,195	36
Yukon—Yukon	9,000	4	4	–	10,220	1,135	10,000	1,111	6,180	687

NOTE:—*Includes population of North West Territories—18,000
NOTA:—*Les 18,000 habitants des Territoires du Nord-Ouest sont compris dans ce total.

Table 4.—Total installed Capacity of Stations including Auxiliary or Stand-by Plants, by kinds of machines and by Provinces. (Central Electric Stations, January 1, 1919).

Provinces	Primary — Matériel fournissant la					
	Total Horse Power — Total des chev.-vap.			Steam Engines and Turbines Total Horse Power. — Machines à vapeur et turbines à vapeur. total chev.-vap.		
	Including Aux. Plant Equipment — Y compris le matériel des usines auxiliaires	Not including Aux. Plant Equipment — Non compris le matériel des usines auxiliaires	Aux. plant Equipment only — Matériel des usines auxiliaires seulement	Including Aux Plant Equipment — Y compris le matériel des usines auxiliaires	Not including Aux Plant Equipment — Non compris le matériel des usines auxibaires	Aux plant Equipment only — Matériel des usines auxiliaires seulement
1	2	3	4	5	6	7
Canada	**1,958,642**	**1,841,114**	**117,528**	**262,562**	**145,637**	**116,925**
Alberta—Alberta	78,320	75,915	2,405	44,380	41,975	2,405
British Columbia—Colombie Britannique	243,964	217,184	26,780	30,606	4,326	26,280
Manitoba—Manitoba	94,542	75,142	19,400	22,090	2,690	19,400
New Brunswick—Nouveau-Brunswick	19,063	18,563	500	11,010	10,510	500
Nova Scotia—Nouvelle-Ecosse	20,315	19,565	750	16,481	15,811	670
Ontario—Ontario	819,743	780,213	39,530	73,140	33,625	39,515
Prince Edward Island—Ile du Prince-Edouard	1,353	1,353		425	425	
Quebec—Québec	639,907	611,744	28,163	37,895	9,740	28,155
Saskatchewan—Saskatchewan	31,215	31,215		26,315	26,315	
Yukon—Yukon	10,220	10,220		220	220	

Primary Power Equipment—

Table 5.—Number, Kind and Capacity of Machines by Provinces. (Central Electric Stations, January 1, 1919).

Provinces	Kind — Sources de l'éner					
	Total Primary Power — Total du matériel fournissant la force motrice primaire			Total Steam — Vapeur, total		
		Horse Power — Chev.-vap.			Horse Power — Chev.-vap.	
	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col.	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
1	2	3	4	5	6	7
Canada	**1,969**	**1,841,114**	**100**	**255**	**145,637**	**7·9**
Alberta—Alberta	84	75,915	4·1	57	41,975	55·3
British Columbia—Colombie Britannique	86	217,184	11·8	20	4,326	2·0
Manitoba—Manitoba	44	75,142	4·1	17	2,690	3·6
New Brunswick—Nouveau-Brunswick	43	18,563	1·0	23	10,510	56·6
Nova Scotia—Nouvelle-Ecosse	59	19,565	1·1	42	15,811	80·8
Ontario—Ontario	342	789,213	42·4	42	33,625	4·3
Prince Edward Island—Ile du Prince-Edouard	12	1,353	0·1	2	425	31·4
Quebec—Québec	243	611,744	33·2	21	9,740	1·6
Saskatchewan—Saskatchewan	92	31,215	1·7	29	26,315	84·3
Yukon—Yukon	4	10,220	0·5	2	220	2·2

Résumé.

Tableau 4.—Machinerie des usines, y compris les usines auxiliaires ou de réserve, par sortes de machines et par provinces. (Usines électriques centrales, 1er janvier 1919).

Power — force motrice primaire				Dynamos — Dynamos		
Gas and Oil Engines Total—Horse-Power — Moteurs à gaz et à pétrole Total chev.-vap.			Water Wheels and Turbines Total Horse Power — Roues hydrauliques et turbines total chev.-vap.	Total K.V.A. Capacity. — Capacité totale en K.V.A.		
Including Aux. Plant Equipment — Y compris le matériel des usines auxiliaires	Not including Aux. Plant Equipment — Non compris le matériel des usines auxiliaires	Aux. Plant Equipment only — Matériel des usines auxiliaires seulement		Including Aux. Plant Equipment — Y compris celles des usines auxiliaires	Not including Aux. Plant Equipment — Non compris celles des usines auxiliaires	Aux. Plant Equipment only — Dynamos, des usines auxiliaires seulement
8	9	10	11	12	13	14
13,889	**13,286**	**603**	**1,682,191**	**1,525,533**	**1,433,722**	**91,811**
1,340	1,340		32,600	60·143	58·193	1,950
2,315	1,815	500	211,043	159,140	138,225	20,915
662	662		71,790	64,711	50,961	13,750
1,075	1,075		6,978	12,836	12·836	
220	140	80	3,614	18,691	18,235	456
2,382	2,367	15	744,221	661,020	628,109	32,911
701	701		227	1,321	1,321	
294	286	8	601,718	514,296	492,467	21,829
4,900	4,900			27,195	27,195	
			10,000	6,180	6,180	

Matériel fournissant la force motrice primaire.

Tableau 5.—Nombre, genre et force des machines, par provinces. (Usines électriques centrales, 1er janvier 1919).

of Power — gie primaire											
Steam Engines — Machines à vapeur			Steam Turbines — Turbines à vapeur			Gas and Oil Engines — Moteurs à gaz et à pétrole			Water Wheels and Turbines — Roues hydrauliques et turbines		
	Horse Power — Chev.-vap.			Horse Power — Chev.-vap.			Horse Power — Chev.-vap.			Horse Power — Chev.-vap.	
No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
8	9	10	11	12	13	14	15	16	17	18	19
218	**54,781**	**3·0**	**37**	**90,853**	**4·9**	**134**	**13,286**	**0·7**	**620**	**1,682,191**	**91·4**
47	12,275	16·2	10	29,700	39·1	13	1,340	1·8	14	32,600	42·9
19	3,696	1·7	1	630	0·3	12	1,815	0·8	54	211,043	97·2
17	2,690	3·6	–	–	–	11	662	0·9	16	71,790	95·5
20	6,555	35·3	3	3,955	21·5	5	1,075	5·8	15	6,978	37·6
39	9,791	50·0	3	6,020	30·8	2	140	0·7	15	3,614	18·5
37	8,455	1·1	5	25,170	3·2	16	2,367	0·3	284	744,221	95·4
2	425	31·4	–	–	–	4	701	51·8	6	227	16·8
16	4,190	0·7	5	5,550	0·9	8	286	–	214	601,718	98·4
20	6,647	21·3	9	19,668	63·0	63	4,900	15·7	–	–	–
1	60	0·6	1	160	1·6	–	–	–	2	10,000	97·8

Primary Power Equipment

Table 6.—Number, Kind and Capacity of Machines for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Class of Station—Catégories d'usines	Kinds of Power—				
	Total Primary Power — Total du matériel fournissant la force motrice primaire		Total Steam — Vapeur, total		
		Horse Power — Chev.-vap.		Horse Power — Chev.-vap.	
	No. — Nomb		No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
1	2	3	4	5	6
Total	**1,009**	**1,841,114**	**235**	**145,637**	**7·9**
Commercial—Commerciales	673	1,434,196	141	83,740	5·8
Municipal—Municipales	336	406,918	114	61,897	15·2
				Per cent	of Total
Total	**100·0**	**100·0**	**100·0**	**100·0**	–
Commercial—Commerciales	66·7	77·9	55·3	57·5	–
Municipal—Municipales	33·3	22·1	44·7	42·5	–

Table 7.—Number and Capacity of Machines for Commercial and Municipal Stations by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 7.—Nombre et capacité des machines des usines commerciales et des usines municipales, par provinces. (Usines électriques centrales, 1er janvier 1919).

Provinces	Total Horse Power of Primary Power Machines — Force totale, en chev.-vap. des machines fournissant la force motrice primaire							
	Total		Commercial — Commerciales			Municipal — Municipales		
				Horse Power — Chev.-vap.			Horse Power — Chev.-vap.	
	No. — Nomb.	Horse Power — Chev.-vap.	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
1	2	3	4	5	6	7	8	9
Canada	**1,009**	**1,841,114**	**673**	**1,434,196**	**77·9**	**336**	**406,918**	**22·1**
Alberta—Alberta	84	75,915	45	50,120	66·0	39	25,795	34·0
British Columbia—Colombie Britannique	86	217,184	60	204,361	94·0	26	12,823	6·0
Manitoba—Manitoba	44	75,142	15	25,863	34·4	29	49,279	65·6
New Brunswick—Nouveau-Brunswick	43	18,563	32	16,203	87·3	11	2,360	12·7
Nova Scotia—Nouvelle-Ecosse	59	19,565	37	15,377	78·6	22	4,188	21·4
Ontario—Ontario	342	780,213	227	516,451	66·2	115	263,762	33·8
Prince Edward Island—Ile du Prince-Edouard	12	1,353	12	1,353	100·0	–	–	–
Quebec—Québec	243	611,744	210	592,934	96·9	33	18,810	3·1
Saskatchewan—Saskatchewan	92	31,215	31	1,314	4·2	61	29,901	95·8
Yukon—Yukon	4	10,220	4	10,220	100·0	–	–	–

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Matériel fournissant la force motrice primaire.

Tableau 6.—Nombre, genre et force des machines, dans les usines commerciales et dans les usines municipales. (Usines électriques centrales, 1er janvier 1919.)

Sources de l'énergie primaire

Steam Engines — Machines à vapeur			Steam Turbines — Turbines à vapeur			Gas and Oil Engines — Moteurs à gaz et à pétrole			Water Wheels and Turbines — Roues hydrauliques et turbines		
	Horse Power — Chev.-vap.			Horse Power — Chev.-vap.			Horse Power — Chev.-vap.			Horse Power — Chev.-vap.	
No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
7	8	9	10	11	12	13	14	15	16	17	18
218	**54,784**	**3·0**	**37**	**90,853**	**4·9**	**134**	**13,286**	**0·7**	**620**	**1,682,191**	**91·4**
121	32,025	2·2	20	51,715	3·6	66	4,800	0·3	466	1,345,656	93·9
97	22,759	5·6	17	39,138	9·6	68	8,486	2·1	154	336,535	82·7
Pourcentage du total											
100·0	**100·0**	.....	**100·0**	**100·0**	.....	**100·0**	**100·0**	.....	**100·0**	**100·0**	.....
55·5	58·5	.....	54·1	56·9	.....	49·3	36·1	.....	75·2	80·0	.....
44·5	41·5	.....	45·9	43·1	.....	50·7	63·9	.....	24·8	20·0	.....

Primary Power Equipment—Matériel fournissant la force motrice primaire.

Table 8.—Number of Generating Stations by Kinds of Primary Power for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 8.—Nombre d'usines productrices d'électricité, par sources d'énergie primaire, soit commerciales, soit municipales. (Usines électriques centrales, 1er janvier 1919).

Kinds of Power Station—Genres d'usines	Number of Stations — Nombre d'usines		
	Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Total	**515**	**332**	**183**
With steam engines only—Avec machines à vapeur seulement	122	68	54
With steam turbines only—Avec turbines à vapeur seulement	8	5	3
With gas or oil engines only—Avec moteurs à gaz ou à pétrole seulement	88	43	45
With both steam engines and turbines—Avec machines à vapeur et turbines à vapeur	11	7	4
With both steam and gas or oil engines—Avec machines à vapeur et moteurs à gaz ou à pétrole	5	4	1
With both steam turbines and gas or oil engines—Avec turbines à vapeur et moteurs à gaz ou à pétrole	1	–	1
Water wheels or turbines without auxiliary equipment—Avec roues ou turbines, sans machines auxiliaires	236	175	61
Water wheels or turbines with auxiliary equipment—Avec roues ou turbines, plus machines auxiliaires	44	30	14

Primary Power Equipment—Matériel fournissant la force motrice primiare.

Table 9. Capacity per Station and per Machine for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 9.—Puissance de production, par usine et par machine, dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919).

Kind of Power—Sources de l'énergie primaire	Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Total Power—Total force motrice	**1 811 111**	**1 431 196**	**106 918**
Per station—Par usine	3,575	4,320	2,224
Per machine—Par machine	1,825	2,131	1,211
Steam engines and steam turbines—Machines à vapeur et turbines à vapeur	145,637	83,740	61,897
Per station—Par usine	999	997	982
Per machine—Par machine	571	594	543
Steam engines—Machines à vapeur—	54,784	32,025	22,759
Per station—Par usine	397	405	385
Per machine—Par machine	251	265	235
Steam turbines—Turbines à vapeur	90,853	51,715	39,138
Per station—Par usine	4,543	4,310	4,892
Per machine—Par machine	2,455	2,586	2,302
Gas and oil engines—Moteurs à gaz et à pétrole	13,286	4,800	8,486
Per station—Par usine	141	102	181
Per machine—Par machine	99	73	125
Waterwheels and turbines—Roues hydrauliques et turbines	1,682,191	1,345,656	336,535
Per station—Par usine	6,008	6,564	4,487
Per machine—Par machine	2,713	2,888	2,185

Table 10.—Steam Engines and Steam Turbines by Capacity of Units for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 10.—Machines à vapeur et turbines à vapeur, classées par séries, dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919).

Class of Station. Catégories d'usines	Total		Steam power Equipment grouped according to Horse Power — Classement, par chevaux-vapeur									
			500 H.P. or under — 500 ch.-vap. ou moins		Over 500 H.P. and under 2,000 H.P. — Entre 500 et 2,000 chev.-vapeur		2,000 H.P. and under 5,000 H.P. — Entre 2,000 et 5,000 chev.-vapeur		5,000 H.P. and under 10,000 H.P. — Entre 5,000 et 10,000 chev.-vapeur		10,000 H.P. and over — 10,000 chev.-vapeur et plus	
	No — No.	H.P. — ch.-vap.	No — No	H.P. — ch.-vap.	No — No	H.P. — ch.-vap.	No — No	H.P. — ch.-vap.	No — No	H.P. — ch.-vap.	No — No	H.P. — ch.-vap.
1	2	3	4	5	6	7	8	9	10	11	12	13
Total	**255**	**145,637**	**194**	**34,334**	**40**	**33,038**	**16**	**42,720**	**4**	**25,543**	**1**	**10,000**
Commercial—Commerciales	141	83,740	106	18,435	25	20,905	7	20,400	2	14,000	1	10,000
Municipal—Municipales	114	51,897	88	15,899	15	12,133	9	22,320	2	11,543	–	–
Steam Engines—Machines à vapeur—												
Total	**218**	**54,784**	**191**	**33,869**	**27**	**20,915**	–	–	–	–	–	–
Commercial—Commerciales	121	32,025	103	17,970	18	14,055	–	–	–	–	–	–
Municipal—Municipales	97	22,759	88	15,899	9	6,860	–	–	–	–	–	–
Steam Turbines—Turbines à vapeur—												
Total	**37**	**90,853**	**3**	**465**	**13**	**12,123**	**16**	**42,720**	**4**	**25,543**	**1**	**10,000**
Commercial—Commerciales	20	51,715	3	465	7	6,850	7	20,400	2	14,000	1	10,000
Municipal—Municipales	17	39,138	–	–	6	5,273	9	22,320	2	11,543	–	–

Primary Power Equipment—Matériel fournissant la force motrice primaire.

Table 11.—Gas and Oil Engines for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 11.—Moteurs à gaz et à pétrole, dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919).

Class of Station—Catégories d'usines	Gas and Oil Engines — Moteurs à gaz et à pétrole		Percent of total — Pourcentage du total	
	Number — Nombre	Horse-Power — Chev.-vapeur	Number — Nombre	Horse-Power — Chev.-vapeur
1	2	3	4	5
Total	**134**	**13,286**	**100·0**	**100·0**
Commercial—Commerciales	66	4,800	49·3	36·1
Municipal—Municipales	68	8,486	50·7	63·9

Primary Power Equipment.—Matériel fournissant la force motrice primaire.

Table 12.—Water Wheels and Turbines by Capacity of Units for Commercial and Municipa Stations. (Central Electric Stations, January 1, 1919).

Tableau 12—Roues hydrauliques et turbines, classées par séries, dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919).

	Total		Machines Grouped According to Horse-Power — Groupement des machines, selon leur force											
			500 H.P. or under — 500 ch.-vap. ou moins		Over 500 H.P. and under 2,000 H.P. — Entre 500 et 2,000 ch.-vap.		2,000 H.P. and under 5,000 H.P. — Entre 2,000 et 5,000 ch.-vap.		5,000 H.P. and under 10,000 H.P. — Entre 5,000 et 10,000 ch.-vap.		10,000 H.P. and under 15,000 H.P. — Entre 10,000 et 15,000 ch.-vap.		15,000 H.P. and over — 15,000 ch.-vap. et plus	
	No	H.P. — ch.-vap.	No	H.P. — ch.-vap.	No	H.P. — ch.-vap.	No.	H.P. — ch.-vap.	No	H.P. — ch.-vap.	No.	H.P. — ch.-vap.	No	H.P. — ch.-vap.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total	**620**	**1,682,191**	**258**	**43,258**	**176**	**181,928**	**67**	**189,025**	**45**	**278,080**	**56**	**671,100**	**18**	**318,500**
Commercial—Commerciales	466	1,345,656	199	32,373	113	117,218	61	175,565	33	218,800	42	483,200	18	318,500
Municipal—Municipales	154	336,535	59	10,885	63	64,710	6	13,460	12	59,280	14	188,200	–	–
Per Cent Distribution—Pourcentage de répartition.														
Total	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**	**100·0**
Commercial—Commerciales	75·2	80·0	77·1	74·2	64·8	64·5	91·1	92·8	73·3	78·6	75·0	71·9	100·0	100·0
Municipal—Municipales	24·8	20·0	22·9	25·8	35·2	35·5	8·9	7·2	26·7	21·4	25·0	28·1	–	–

Hydro-Electric Generating Stations.—Usines hydro-électriques.

Table 13.—Summary by provinces. (Central Electric Stations, January 1, 1919).

Provinces	No. of Stations — Nombre d'usines	Capital Invested — Capitaux engagés	Revenue from the sale of Power — Recettes provenant de la vente d'électricité		
			Total	For Lighting Purposes — Pour l'éclairage	For All other Purposes — Pour tous autres usages
1	2	3	4	5	6
		$	$	$	$
Canada	**280**	**326,678,516**	**23,908,420**	**5,765,526**	**18,142,894**
Alberta—Alberta	4	5,254,196	384,683	84,622	300,061
British Columbia—Colombie Britannique	30	31,847,714	2,235,640	391,962	1,843,678
Manitoba—Manitoba	4	13,891,622	1,936,602	1,130,666	805,936
New Brunswick—Nouveau-Brunswick	8	1,275,627	168,537	79,949	88,588
Nova Scotia—Nouvelle-Ecosse	13	782,844	109,500	92,008	17,492
Ontario—Ontario	115	139,648,862	15,929,850	1,370,700	14,559,150
Prince Edward Island—Ile du Prince-Edouard	6	66,850	5,695	5,665	30
Quebec—Québec	99	130,682,260	13,051,980	2,609,903	10,472,077
Saskatchewan—Saskatchewan	–	–	–	–	–
Yukon—Yukon	1	3,228,541	55,933	51	55,882

Provinces	Dynamos		Auxiliary Matériel — Machinerie					
			Steam Engines — Machines à vapeur					
			Total		Under 500 H.P. — Au-dessous de 500 ch.-vap.		500 H.P. and over — 500 ch.-vap. et plus	
	No. — No.	K.V.A. — K.V.A.	No. — No.	H.P. — Ch.-vap.	No. — No.	H.P. — Ch.-vap.	No. — No.	H.P. — Ch.-vap.
	22	23	24	25	26	27	28	29
Canada	**584**	**1,301,224**	**50**	**20,595**	**33**	**6,605**	**17**	**13,990**
Alberta—Alberta	10	22,310	3	1,405	1	155	2	1,250
British Columbia—Colombie Britannique	56	133,666	3	780	3	780	–	–
Manitoba—Manitoba	16	48,563	8	7,400	2	950	6	6,450
New Brunswick—Nouveau-Brunswick	14	4,360	2	500	2	500	–	–
Nova Scotia	16	2,735	3	340	3	340	–	–
Ontario—Ontario	264	598,992	16	4,015	13	2,515	3	1,500
Prince Edward Island—Ile du Prince-Edouard	6	346	–	–	–	–	–	–
Quebec—Québec	200	484,262	15	6,155	9	1,365	6	4,790
Saskatchewan—Saskatchewan	–	–	–	–	–	–	–	–
Yukon—Yukon	2	6,000	–	–	–	–	–	–

Hydro-Electric Generating Stations—Usines hydro-électriques.

Tableau 13.—Résumé par provinces. (Usines électriques centrales, 1er janvier 1919).

No. Nomb.	Total Horse Power Chevaux-vapeur Total	Per cent of Total Pourcentage du total	Water Wheels and Turbines — Roues hydrauliques et turbines — Primary Power — Force motrice primaire — Total — No.	Total — H.P. Ch.-vap.	Under 500 H.P. — Au-dessous de 500 ch.-vap. — No.	H.P. Ch.-vap.	500 H.P. and under 2,000 H.P. — Entre 500 et 2,000 ch.-vap. — No.	H.P. Ch.-vap.	2,000 H.P. and under 5,000 H.P. — Entre 2,000 et 5,000 ch.-vap. — No.	H.P. Ch.-vap.	5,000 H.P. and under 10,000 H.P. — Entre 5,000 et 10,000 ch.-vap. — No.	H.P. Ch.-vap.	10,000 H.P. and under 15,000 H.P. — Entre 10,000 et 15,000 ch.-vap. — No.	H.P. Ch.-vap.	15,000 H.P. and over — 15,000 ch.-vap. et plus — No.	H.P. Ch.-vap.
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
620	**1,682,191**	**100·0**	**258**	**43,258**	**176**	**181,928**	**67**	**189,025**	**45**	**278,080**	**56**	**671,400**	**18**	**318,500**		
14	32,500	1·9	8	1,000	–	–	2	8,000	4	23,600	–	–	–	–		
54	211,043	12·6	15	2,445	17	19,598	5	14,400	4	30,000	12	144,600	–	–		
16	71,790	4·3	1	450	2	1,000	5	23,940	8	46,400	–	–	–	–		
15	6,978	0·4	11	2,078	3	2,500	1	2,400	–	–	–	–	–	–		
13	3,614	0·2	13	3,614	–	–	–	–	–	–	–	–	–	–		
284	744,221	44·2	101	17,141	102	100,490	32	81,760	13	70,630	29	365,700	7	108,500		
6	227	–	6	227	–	–	–	–	–	–	–	–	–	–		
214	601,718	35·8	100	16,303	52	58,340	22	58,525	14	97,450	15	161,100	11	210,000		
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
2	10,000	0·6	–	–	–	–	–	–	2	10,000	–	–	–	–		

Power Plant Equipment — des usines auxiliaires — Primary Power — fournissant l'énergie primaire

Total	Steam Turbines — Turbines à vapeur — Total		500 H.P. and under 2,000 H.P. — Entre 500 et 2,000 ch.-vap.		2,000 H.P. and under 5,000 H.P. — Entre 2,000 et 5,000 ch.-vap.		5,000 H.P. and under 10,000 H.P. — Entre 5,000 et 10,000 ch.-vap.		10,000 H.P. and over — 10,000 ch.-vap. et plus		Gas and Oil Engines — Moteurs à gaz et à pétrole — Total		Dynamos	
No.	H.P. Ch.-vap.	No.	H.P. Ch.-vap.	No.	H.P. Ch.-vap.	No.	H.P. Ch.-vap.	No.	H.P. Ch.-vap.	No.	H.P. Ch.-vap.	No.	K.V.A.	
30	31	32	33	34	35	36	37	38	39	40	41	42	43	
20	**96,000**	**3**	**3,000**	**12**	**36,800**	**1**	**6,700**	**4**	**49,500**	**5**	**603**	**53**	**91,636**	
1	1,000	1	1,000	–	–	–	–	–	–	–	–	4	1,950	
9	25,500	2	2,000	6	16,800	1	6,700	–	–	2	500	14	20,915	
3	12,000	–	–	3	12,000	–	–	–	–	–	–	11	13,750	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	
–	–	–	–	–	–	–	–	–	–	1	80	2	281	
4	35,500	–	–	2	6,000	–	–	2	29,500	1	15	14	32,911	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	
3	22,000	–	–	1	2,000	–	–	2	20,000	1	8	8	21,829	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	

Hydro-Electric Generating Stations—Usines hydro-électriques.

Table 14.—Primary Power Capacity—Installed—Ultimate as designed—New Installation contemplated. (Central Electric Stations, January 1, 1919).

Tableau 14.—Capacité actuelle et potentielle de la machinerie fournissant la force motrice primaire—Nouvelles installations projetées. (Usines électriques centrales, 1er janvier 1919).

Provinces	Total Water Wheels and Turbines installed in H.P. — Ch.-vap. des roues hydrauliques et turbines en fonctionnement	Ultimate capacity of Plants as already designed in H.P. — Capacité potentielle des usines en ch.-vap.	New Installations contemplated in H.P. — Nouvelles installations projetées en ch.-vap.
1	2	3	4
Canada	**1,682,191**	**2,115,043**	**135,755**
Alberta—Alberta	32,600	32,600	–
British Columbia—Colombie Britannique	211,043	245,243	13,000
Manitoba—Manitoba	71,790	125,390	14,000
New Brunswick—Nouveau-Brunswick	6,978	8,468	1,150
Nova Scotia—Nouvelle-Ecosse	3,614	4,214	600
Ontario—Ontario	744,221	837,333	75,090
Prince Edward Island—Ile du Prince-Edouard	237	237	–
Quebec—Québec	601,718	851,568	31,915
Saskatchewan—Saskatchewan	–	–	–
Yukon—Yukon	10,000	10,000	–

Dynamo Equipment—Dynamos.

Table 15.—Number, Kind and Capacity for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 15.—Leur nombre, leur genre et leur capacité, dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919).

	Kind of Dynamo—Genre de dynamos							
	Total		Direct Current — Courant direct			Alternating Current — Courant alternatif		
			K.V.A.			K.V.A.		
			No — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
1	2	3	4	5	6	7	8	9
Total	**990**	**1,133,722**	**141**	**12,494**	**0·8**	**849**	**1,121,228**	**99·2**
Commercial—Commerciales	659	1,118,438	101	9,849	0·9	558	1,108,589	99·1
Municipal—Municipales	331	315,284	40	2,645	0·8	291	312,639	99·2
Per cent of Total—Pourcentage du total								
Total	**100·0**	**100·0**	**100·0**	**100·0**		**100·0**	**100·0**	
Commercial—Commerciales	66·6	78·1	71·6	78·8		65·7	78·0	
Municipal—Municipales	33·4	21·9	28·4	21·2		34·3	22·0	

Table 16.—Number of Stations by Kind of Dynamo for Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 16.—Nombre d'usines, commerciales et municipales, par genre de dynamos. (Usines électriques centrales, 1er janvier 1919).

Kind of Dynamo—Genre de dynamos	Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Total	**515**	**332**	**183**
Stations with direct current only—Usines avec courant direct seulement	81	63	18
Stations with alternating current only—Usines avec courant alternatif seulement	421	261	160
Stations with both D.C. and A.C.—Usines avec les deux genres de courant	13	8	5

Table 17.—Capacity per Station and per machine for Commercial and Municipal Statilns. (Central Electric Stations, January 1, 1919).

Tableau 17.—Leur capacité, par usine et par machine, dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919).

Kind of Dynamo—Genre de dynamos	Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Total K.V.A. Capacity—Capacité totale en K.V.A	**1,433,722**	**1,118,438**	**315,284**
Average capacity—Moyenne de capacité..			
Per station—Par usine	2,784	3,369	1,723
Per machine—Par machine	1,448	1,697	953
Direct current Dynamos—Dynamos à courant direct	12,494	9,849	2,645
Average capacity—Moyenne de capacité—			
Per station—Par usine	133	139	115
Per machine—Par machine	89	98	66
Alternating current dynamos—Dynamos à courant alternatif	1,421,228	1,108,589	312,639
Average capacity—Moyenne de capacité—			
Per station—Par usine	3,277	4,121	1,895
Per machine—Par machine	1,674	1,987	1,07

Table 18.—Number and Total Capacity for Commercial and Municipal Stations by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 18.—Leur nombre et leur capacité totale, dans les usines commerciales et municipale par provinces. (Usines électriques centrales, 1er janvier 1919).

	Total K.V.A. Capacity of Dynamos—Capacité totale des dynamos en K.V.A							
	Total		Commercial — Commerciales			Municipal — Municipales		
			K.V.A.			K.V.A.		
	No. — Nomb.	K.V.A.	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3	No. — Nomb.	Total	Per cent of Col. 3 — Pour-cent. de la col. 3
1	2	3	4	5	6	7	8	9
Canada	**990**	**1,433,722**	**659**	**1,118,438**	**78·1**	**331**	**315,284**	**21·9**
Alberta—Alberta	78	58,193	42	37,200	63·9	36	20,993	36·1
British Columbia—Colombie Britannique	91	138,225	64	129,615	93·8	27	8,610	6·2
Manitoba—Manitoba	44	50,961	15	11,377	22·3	29	39,584	77·7
New Brunswick—Nouveau-Brunswick	44	12,836	32	11,324	88·2	12	1,512	11·8
Nova Scotia—Nouvelle-Ecosse	66	18,235	40	14,981	82·2	26	3,254	17·8
Ontario—Ontario	331	628,109	225	426,899	67·9	106	201,210	32·1
Prince Edward Island—Ile du Prince-Edouard	12	1,321	12	1,321	100·0	–	–	–
Quebec—Québec	228	492,467	193	478,407	97·2	35	14,060	2·8
Saskatchewan—Saskatchewan	91	27,195	31	1,154	4·2	60	26,061	95·8
Yukon—Yukon	5	6,180	5	6,180	100·0	–	–	–

Dynamo Equipment.

Table 19.—Number and Total Capacity of Stations Grouped According to Dynamo Capacity and by Provinces. (Central Electric Stations, January 1, 1919).

Provinces	Total		Stations grouped — Groupement des — Under 200 K.V.A. — Moins de 200 K.V.A.	
	No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.	No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.
1	2	3	4	5
Canada	**515**	**1,433,722**	**284**	**21,649**
Alberta—Alberta	49	58,193	34	2,431
British Columbia—Colombie Britannique	50	138,225	27	2,746
Manitoba—Manitoba	24	50,961	16	883
New Brunswick—Nouveau-Brunswick	22	12,836	10	916
Nova Scotia—Nouvelle-Ecosse	35	18,235	17	1,467
Ontario—Ontario	150	628,109	66	5,264
Prince Edward Island—Ile du Prince Edouard	8	1,321	6	346
Quebec—Québec	114	492,467	58	4,649
Saskatchewan—Saskatchewan	60	27,195	48	2,717
Yukon—Yukon	3	6,180	2	180

Dynamo Equipment.

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Table 20.—Number and Total Capacity of Dynamos Grouped according to size of Dynamo and by Provinces. (Central Electric Stations, January 1, 1919).

Provinces	Total		Dynamos grouped — Groupement des — Under 200 K.V.A. — Moins de 200 K.V.A.	
	No. — Nomb.	Capacity — Capacité	No. — Nomb.	Capacity — Capacité
1	2	3	4	5
Canada	**990**	**1,433,722**	**450**	**37,439**
Alberta—Alberta	78	58,193	48	3,879
British Columbia—Colombie Britannique	91	138,225	46	4,467
Manitoba—Manitoba	44	50,961	25	1,636
New Brunswick.—Nouveau-Brunswick	44	12,836	24	2,341
Nova Scotia—Nouvelle-Ecosse	66	18,235	44	4,311
Ontario—Ontario	331	628,109	98	8,687
Prince Edward Island—Ile du Prince Edouard	12	1,321	10	821
Quebec—Québec	228	492,467	80	7,151
Saskatchewan—Saskatchewan	91	27,195	72	3,966
Yukon—Yukon	5	6,180	3	180

—Dynamos.

Tableau 19.—Nombre et capacité totale des usines, groupées par capacité de leurs dynamos et par provinces. (Usines électriques centrales, 1er janvier 1919).

according to Total Dynamo Capacity.

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usines selon la capacité de leurs dynamos.

200 and under 500 K.V.A. — Moins de 200 K.V.A.		500 and under 1,000 K.V.A. — Entre 200 et 300 K.V.A.		1,000 and under 2,000 K.V.A. — Entre 500 et 1,000 K.V.A.		2,000 and under 5,000 K.V.A. — Entre 2,000 et 5,000 K.V.A.		5,000 K.V.A. and over — 500 K.V.A. et plus	
No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.	No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.	No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.	No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.	No. of Stations — Nomb. d'usines	Capacity in K.V.A. — Capacité en K.V.A.
6	7	8	9	10	11	12	13	14	15
80	**24,295**	**47**	**32,062**	**26**	**36,675**	**41**	**128,077**	**37**	**1,190,964**
7	2,029	2	1,380	.....	.....	2	6,079	4	46,224
7	2,553	4	2,461	4	5,700	3	7,815	5	116,950
4	1,228	2	1,350	.....	.....	.....	.....	2	47,500
6	1,675	3	1,875	1	1,210	2	7,160	.....	.....
11	3,613	4	2,630	1	1,825	1	2,500	1	6,200
23	6,640	19	13,273	9	12,516	21	70,156	12	520,260
1	300	1	675	.....	.....	.....	.....	.....	.....
17	5,157	9	6,092	9	13,062	11	30,612	10	432,895
4	1,100	3	2,326	2	2,362	1	3,755	2	14,935
.....	.....	.....	.....	.....	.....	.....	.....	1	6,000

—Dynamos.

Tableau 20.—Leur nombre et leur capacité totale, par groupes appariés et par provinces. (Usines électriques centrales, 1er janvier 1919).

according to K.V.A. Capacity.

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dynamos, selon leur capacité en K.V.A.

200 and under 500 K.V.A.		500 and under 1,000 K.V.A.		1,000 and under 2,000 K.V.A.		2,000 and under 5,000 K.V.A.		5,000 K.V.A. and over	
Entre 200 et 500 K.V.A.		Entre 500 et 1,000 K.V.A.		Entre 1,000 et 2,000 K.V.A.		Entre 2,000 et 5,000 K.V.A.		5,000 K.V.A. et plus.	
No. — Nomb.	Capacity. — Capacité	No. — Nomb.	Capacity. — Capacité	No. — Nomb.	Capacity. — Capacité	No. — Nomb.	Capacity — Capacité	No. — Nomb.	Capacity — Capacité
6	7	8	9	10	11	12	13	14	15
158	**48,939**	**147**	**106,798**	**78**	**117,769**	**64**	**205,225**	**93**	**917,552**
12	4,015	3	2,350	3	4,375	10	32,112	2	11,562
11	3,743	10	7,940	8	11,125	2	8,000	14	102,950
6	1,825	.....	.....	.....	.....	10	28,750	3	18,750
12	3,335	6	3,435	1	1,500	1	2,225	.....	.....
16	4,599	3	1,875	1	1,250	2	6,209	.....	.....
61	19,078	76	55,512	37	56,297	15	46,445	44	442,090
2	500	.....	.....	.....	.....	.....	.....	.....	.....
32	9,634	43	31,392	24	36,347	19	65,243	30	342,200
6	2,210	6	3,894	4	6,875	3	10,250	.....	.....
.....	.....	.....	.....	.....	.....	2	6,000	.....	.....

Primary Power and Dynamo Equipment—Matériel fournissant l'énergie primaire et dynamos.

Table 21.—Comparative Summary by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 21.—Etat comparatif par provinces. (Usines électriques centrales, 1er janvier 1919).

Provinces	Primary Power Matériel fournissant l'énergie primaire.							K.V.A. Capacity of Dynamos Capacité des dynamos en K.V.A		
	Total H.P.	Steam Engines or Steam turbines — Machines à vapeur ou turbines à vapeur		Gas or Oil Engines — Moteurs à gaz ou à pétrole		Water-Wheels or turbines — Roues hydrauliques ou turbines		Total	Direct Current — Courant direct	Alternating Current — Courant alternatif
	Total — Ch.-vap.	No. — No.	H.P. — Ch.-vap.	No. — No.	H.P. — Ch.-vap.	No — No.	H.P. — Ch.-vap.	Total		
1	2	3	4	5	6	7	8	9	10	11
Canada	**1,811,114**	**255**	**145,637**	**134**	**13,286**	**620**	**1,682,191**	**1,433,722**	**12,494**	**1,421,228**
Alberta—Alberta	75,915	57	41,975	13	1,340	14	32,600	58,193	1,706	56,487
Br. Columbia—Colombie Britannique	217,184	20	4,326	12	1,815	54	211,043	138,225	635	137,590
Manitoba—Manitoba	75,142	17	2,690	11	662	16	71,790	50,961	352	50,609
New Brunswick—Nouveau-Brunswick	18,563	23	10,510	5	1,075	15	6,978	12,836	846	11,990
Nova Scotia—Nouvelle-Ecosse	19,565	42	15,811	2	140	15	3,614	18,235	683	17,552
Ontario—Ontario	780,213	42	33,625	16	2,367	284	744,221	628,109	4,414	623,695
Prince Edward Island—Ile du Prince-Edouard	1,353	2	425	4	701	6	227	1,321	60	1,261
Quebec—Québec	611,744	21	9,740	8	286	214	601,718	492,467	2,212	490,255
Saskatchewan—Saskatchewan	31,215	29	26,315	63	4,900			27,195	1,556	25,639
Yukon	10,220	2	220			2	10,000	6,180	30	6,150

Capital Invested—Absorption de capital.

Table 22.—Total for Commercial and Municipal Stations.
(Central Electric Stations, January 1, 1919).

Tableau 22.—Capitaux engagés dans les usines commerciales et municipales.
(Usines électriques centrales, 1er janvier, 1919.)

	Total — Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Total Capital Invested—Total des capitaux absorbés	**$ 401,942,402**	**$ 288,151,605**	**$ 113,790,797**
Real estate, construction of dams, flumes penstocks, hydraulic works, power stations and equipment, transmission and distribution equipment—Immeubles, construction de digues, biefs, canaux de dérivation, ouvrages de captation, usines et machinerie, réseaux de transmission et de distribution	356,547,217	250,591,215	105,956,002
Cash and current assets including supplies and all other items—Fonds de roulement, matières en stock et tous autres items	45,395,185	37,560,390	7,834,795

Capital Invested—Absorption de capital.

Table 23.—Total and Average per Horse-Power of Primary Power Machines and Per K.V.A Capacity of Dynamos All Stations by Provinces.
(Central Electric Stations, January 1, 1919).

Tableau 23.—Capital d'exploitation par cheval-vapeur de force motrice primaire et par K.V.A. de la capacité des dynamos dans toutes les usines et par provinces.
(Usines électriques centrales, 1er janvier 1919).

Provinces	Total	Not including Auxiliary Plant Equipment — Sans comprendre la machinerie des usines auxiliaires				Including Auxiliary Plant Equipment — Y compris la machinerie des usines auxiliaires			
	Total Capital Invested — Total des capitaux engagés	Total Primary Horse-Power — Ch.-vap. de la machinerie d'énergie primaire	Capital Invested per H.P. — Capital d'exploitation par ch.-vap.	Total Dynamo K.V.A. — Capacité totale des dynamos en K.V.A.	Capital Invested per K.V.A. — Capital d'exploitation par K.V.A.	Total Primary Horse-Power — Ch. vap. de la machinerie d'énergie primaire	Capital Invested per H.P. — Capital d'exploitation par ch.-vap.	Total Dynamo K.V.A. — Capacité totale des dynamos en K.V.A.	Capital Invested per K.V.A. — Capital d'exploitation par K.V.A.
1	2	3	4	5	6	7	8	9	10
	$		$		$		$		$
Canada	**401,942,402**	**1,841,114**	**218**	**1,433,722**	**280**	**1,958,642**	**205**	**1,525,533**	**263**
Alberta—Alberta	12,777,082	75,915	168	58,193	220	78,320	163	60,413	211
Britisb. Columbia—Colombie Britannique	39,446,950	217,184	182	138,225	285	243,964	162	159,140	248
Manitoba—Manitoba	15,020,866	75,142	200	50,961	295	94,542	159	64,711	232
New Brunswick—Nouveau-Brunswick	3,564,542	18,563	192	12,836	278	19,063	187	12,836	278
Nova Scotia—Nouvelle-Ecosse	3,977,311	19,565	203	18,235	218	20,315	196	18,691	213
Ontario—Ontario	178,788,085	780,213	229	628,109	285	819,743	218	661,020	270
Prince Edward Island—Ile du Prince-Edouard	403,761	1,353	298	1,321	306	1,353	298	1,321	306
Quebec—Québec	138,374,304	611,744	226	492,467	281	639,907	216	514,296	269
Saskatchewan—Saskatchewan	6,083,198	31,215	195	27,195	224	31,215	195	27,195	224
Yukon—Yukon	3,506,303	10,220	343	6,180	567	10,220	343	6,180	567

Capital Invested—Absorption de capital.

Table 24.—Total and average per Horse-Power of Primary Power Machines and per K.V.A Capacity of Dynamos, by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 24.—Capital d'exploitation par cheval-vapeur de force motrice primaire et par K.V.A. de la capacité des dynamos, dans les usines hydro-électriques, par provinces. (Usines électriques centrales, 1er janvier 1919).

Provinces	Total				
	Total capital Invested — Total capitaux absorbés	Water Wheels and Turbines not including Auxiliary Plant Equipment — Roues hydrauliques et turbines à l'exclusion de celles des usines auxiliaires		Water wheels and Turbines including Auxiliary Plant Equipment — Roues hydrauliques et turbines y compris celles des usines auxiliaires	
		Total Horse-Power — Total chev.-vap.	Capital Invested per Horse-Power — Capital d'exploitation par chev.-vap.	Total Horse-Power — Total chev.-vap.	Capital Invested per Horse-Power — Capital d'exploitation par chev.-vap.
1	2	3	4	5	6
	$		$		$
Canada	**364,479,961**	**1,682,191**	**217**	**1,799,389**	**203**
Alberta—Alberta	6,990,972	32,600	214	35,005	200
British Columbia—Colombie Britannique	38,450,131	211,043	182	237,823	162
Manitoba—Manitoba	14,340,458	71,790	200	91,190	157
New Brunswick—Nouveau-Brunswick	1,303,727	6,978	187	7,478	174
Nova Scotia—Nouvelle-Ecosse	797,122	3,614	221	4,034	198
Ontario—Ontario	166,112,988	744,221	223	783,751	212
Prince Edward Island—Ile du Prince-Edouard	67,230	227	296	227	296
Quebec—Québec	132,945,655	601,718	221	629,881	211
Saskatchewan—Saskatchewan	–	–	–	–	–
Yukon—Yukon	3,471,678	10,000	347	10,000	347

Revenue from Sale of Power—Recettes provenant de la vente d'électricité.

Table 25.—Total for Commercial and Municipal Stations according to use of power. (Central Electric Stations, January 1, 1919).

Tableau 25.—Recettes encaissées par les usines commerciales et par les usines municipales, selon les usages du fluide. (Usines électriques centrales, 1er janvier 1919).

	Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Revenue from sale of power—Recettes de la vente d'électricité—	$	$	$
Total	53,549,133	33,190,882	20,358,251
For lighting purposes—Pour l'éclairage	16,952,512	8,638,648	8,313,864
For all other purposes—Pour tous autres usages	36,596,621	24,552,234	12,044,387

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Revenue from Sale of Power—Recettes provenant de la vente d'électricité.

Table 26.—For Stations Grouped according to Dynamo Capacity.
(Central Electric Stations, January 1, 1919).

Tableau 26.—Par groupes d'usines, selon la capacité de leurs dynamos.
(Usines électriques centrales, 1er janvier 1919).

Revenue from the Sale of Power — Recettes provenant de la vente d'électricité	Total	Stations Grouped According to Dynamo Capacity — Groupement des usines, selon la capacité de leurs dynamos						Stations having no Generating Equipment — Usines dépourvues de dynamos
		Under 200 K.V.A. — Moins de 200 K.V.A.	200 K.V.A. and under 500 K.V.A. — Entre 200 et 500 K.V.A.	500 K.V.A. and under 1,000 K.V.A. — Entre 500 et 1,000 K.V.A.	1,000 K.V.A. and under 2,000 K.V.A. — Entre 1,000 et 2,000 K.V.A.	2,000 K.V.A. and under 5,000 K.V.A. — Entre 2,000 et 5,000 K.V.A.	5,000 K.V.A. and over — 5,000 K.V.A. et plus	
1	2	3	4	5	6	7	8	9
	$	$	$	$	$	$	$	$
Total	**53,549,133**	**1,278,799**	**1,082,242**	**1,500,738**	**3,392,965**	**3,967,819**	**30,978,872**	**11,347,698**
For lighting purposes—Pour l'éclairage	16,952,512	1,115,922	858,827	1,047,558	714,060	1,819,025	5,351,398	6,045,722
For all other purposes—Pour tous autres usages	36,596,621	162,877	223,415	453,180	2,678,905	2,148,794	25,627,474	5,301,976

Capital Invested and Revenue from Sale of Power—Capitaux engagés et recettes encaissées.

Table 27.—For Generating and Non-Generating Stations by Provinces.
(Central Electric Stations, January 1, 1919).

Tableau 27—Dans les usines productrices d'électricité et les usines non génératrices, par provinces.
(Usines électriques centrales, 1er janvier 1919).

Provinces	Capital Invested — Capitaux engagés			Revenue — Recettes		
	Total	Stations with Generating Equipment — Usines munies de dynamos	Stations with no Generating Equipment — Usines dépourvues de dynamos	Total	Stations with Generating Equipment — Usines munies de dynamos	Stations with no Generating Equipment — Usines dépourvues de dynamos
1	2	3	4	5	6	7
	$	$	$	$	$	$
Canada	**401,942,402**	**364,653,246**	**37,289,156**	**53,549,133**	**42,201,435**	**11,347,698**
Alberta—Alberta	12,777,082	11,953,276	823,806	2,294,361	1,737,676	556,685
British Columbia—Colombie Britannique	39,446,930	32,817,958	6,628,992	4,553,310	2,451,827	2,101,483
Manitoba—Manitoba	15,020,866	14,546,230	474,636	2,236,595	2,182,000	54,595
New Brunswick—Nouveau-Brunswick	3,564,542	3,536,442	28,100	842,186	832,276	9,910
Nova Scotia—Nouvelle-Ecosse	3,977,311	3,724,957	252,354	1,227,972	1,158,119	69,853
Ontario—Ontario	178,788,085	152,323,959	26,464,126	25,376,520	17,746,002	7,630,518
Prince Edward Island—Ile du Prince-Edouard	403,761	403,381	380	70,392	70,312	80
Quebec—Québec	138,374,304	136,042,425	2,331,879	15,337,376	14,466,582	870,794
Saskatchewan—Saskatchewan	6,083,198	6,041,452	41,746	1,488,593	1,481,584	8,309
Yukon—Yukon	3,506,303	3,263,166	243,137	120,528	75,057	45,471

Capital Invested, Employees, Salaries and Wages—Capitaux engagés, personnel, traitements appointements et salaires.

Table 28.—Total by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 28.—Totaux, par provinces. (Usines électriques centrales, 1er janvier 1919).

Provinces	Capital Invested in — Capitaux représentés par			Salaried Employees — Employés		Wage Earners — Main-d'oeuvre	
	Total	Land Buildings and Plant — Terrains, bâtiments, installations	Operating Accounts and Bills Receivable — Fonds de roulement et comptes courants	No. — Nomb.	Salaries — Traitements et appointements	No. — Nomb.	Wages — Salaires
1	2	3	4	5	6	7	8
	$	$	$		$		$
Canada	**401,942,402**	**356,547,217**	**45,395,185**	**3,971**	**4,300,908**	**5,725**	**6,053,334**
Alberta—Alberta	12,777,082	12,416,024	361,058	135	173,644	282	375,430
British Columbia—Colombie Britannique	39,466,950	37,441,624	2,005,326	272	376,027	362	480,831
Manitoba—Manitoba	15,020,866	14,594,824	426,042	224	251,813	214	255,424
New Brunswick—Nouveau-Brunswick	3,564,542	3,275,292	289,250	62	73,124	116	118,462
Nova Scotia—Nouvelle-Ecosse	3,977,311	3,637,191	340,120	99	82,185	176	153,520
Ontario—Ontario	178,788,085	157,712,233	21,075,852	1,969	2,089,420	2,462	2,551,820
Prince Edward Island—Ile du Prince-Edouard	403,761	366,828	36,933	11	8,310	17	11,328
Quebec—Québec	138,374,304	118,015,571	20,358,733	1,024	1,030,522	1,919	1,892,284
Saskatchewan—Saskatchewan	6,083,198	5,804,331	278,867	162	193,519	165	182,803
Yukon—Yukon	3,506,303	3,283,293	233,004	13	22,344	12	31,432

Employees, Salaries and Wages—Personnel, traitements, appointements et salaires

Table 29.—For Commercial and Municipal Stations. (Central Electric Stations, January 1, 1919).

Tableau 29.—Dans les usines commerciales et municipales. (Usines électriques centrales, 1er janvier 1919.)

Employees, Salaries and Wages—Personnel, appointements et salaires	Total	Commercial — Commerciales	Municipal — Municipales
1	2	3	4
Total	—	—	—
Number—Nombre	9,696	5,690	4,006
Salaries and wages—Traitements, appointements et salaires	$ 10,534,242	$ 6,137,525	$ 4,216,717
Salaried employees—including officers, superintendents, managers, clerks, steenographers and other office employees, also expert operators—Fonctionnaires et employés, comprenant: administrateurs, directeurs, gérants, commis, sténographes et autres employés de bureaux, y compris les spécialistes de l'exploitation—			
Number—Nombre	3,971	1,907	2,064
Salaries—Traitements et appointements	$ 4,300,908	$ 2,129,702	$ 2,171,206
Wage earners—Ouvriers et journaliers—			
Number—Nombre	5,725	3,783	1,942
Wages—Salaires	$ 6,053,334	$ 4,007,823	$ 2,045,511

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Employees, Salaries and Wages—Personnel, traitements, appointements et salaires.

Table 30.—Total for Commercial and Municipal Stations by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 30.—Dans les usines commerciales et municipales, par provinces. (Usines centrales électriques, 1er janvier 1919).

Provinces	Total		Commercial Commerciales		Municipal Municipales	
	No. — Nomb.	Salaries and Wages — Traitements, appointements et salaires	No. — Nomb.	Salaries and Wages — Traitements, appointements et salaires	No. — Nomb.	Salaries and Wages — Traitements, appointements et salaires
1	2	3	4	5	6	7
		$		$		$
Canada	**9,696**	**10,354,242**	**5,690**	**6,137,525**	**4,006**	**4,216,717**
Alberta—Alberta	417	549,074	173	211,576	244	337,498
British Columbia—Colombie Britannique	634	856,858	502	700,152	132	156,706
Manitoba—Manitoba	438	507,237	98	109,443	340	397,794
New Brunswick—Nouveau-Brunswick	178	191,586	151	165,198	27	26,388
Nova Scotia—Nouvelle-Ecosse	275	235,705	214	188,278	61	47,427
Ontario—Ontario	4,431	4,641,240	1,685	1,888,762	2,746	2,752,478
Prince Edward Island—Ile du Prince-Edouard	28	19,638	28	19,638	–	–
Quebec—Québec	2,943	2,922,806	2,783	2,772,647	160	150,159
Saskatchewan—Saskatchewan	327	376,322	31	28,055	296	348,267
Yukon—Yukon	25	53,776	25	53,776	–	–

Employees, Salaries and Wages—Personnel, traitements, appointements et salaires.

Table 31.—Average per Primary Horse Power and per K.V.A. Dynamo Capacity by Provinces. (Central Electric Stations, January 1, 1919).

Tableau 31.—Moyenne par cheval-vapeur de force motrice primaire et par K.V.A. des dynamos, par provinces. (Usines électriques centrales, 1er janvier 1919.)

Provinces	Total Primary Horse Power Installed — Ch.-vap. du matériel fournissant la force motrice primaire	Total Dynamo Capacity Installed in K.V.A. — Capacité totale, en K.V.A. des dynamos installées	Salaried Employees and Wages Earners — Employés et ouvriers			Salaries and Wages — Traitements, appointements et salaires		
			Total Number — Nombre total	Per 1,000 H.P. Installed — Par 1,000 ch.-vap. installés	Per 1,000 K.V.A. Installed — Par 1,000 K.V.A. installés	Total	Per Installed H.P. — Par ch.-vap. installé	Per Installed K.V.A. — Par K.V.A. installé
1	2	3	4	5	6	7	8	9
						$	$ cts.	$ cts.
Canada	**1,841,114**	**1,433,722**	**9,696**	**5·2**	**6·7**	**10,354,242**	**5·62**	**7·23**
Alberta—Alberta	75,915	58,193	417	5·5	7·2	549,074	7·23	9·44
British Columbia—Colombie Britannique	217,184	138,225	634	2·9	4·6	856,858	3·93	6·20
Manitoba—Manitoba	75,142	50,961	438	5·8	8·6	507,237	6·75	9·95
New Brunswick—Nouveau-Brunswick	18,563	12,836	178	9·6	13·9	191,586	10·32	14·92
Nova Scotia—Nouvelle-Ecosse	19,565	18,235	275	14·1	15·1	235,705	12·04	12·92
Ontario—Ontario	780,213	628,109	4,431	5·7	7·1	4,641,240	5·95	7·39
Prince Edward Island—Ile du Prince-Edouard	1,353	1,321	28	20·7	21·2	19,638	14·51	14·86
Quebec—Québec	611,744	492,467	2,943	4·8	6·0	2,922,806	4·78	5·93
Saskatchewan—Saskatchewan	31,215	27,195	327	10·5	12·0	376,322	12·05	13·84
Yukon—Yukon	10,230	6,180	25	2·4	4·0	53,776	5·26	8·70

Table 32—Number for all Stations Grouped by Weekly Wages paid December 15, 1918. (Central Electric Stations, January 1, 1919).

Wage Classes — Classes de salaires	Canada				Alberta			
	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total
	Male — Hommes	Female — Femmes	Male and Female — Garçons et filles		Male — Hommes	Female — Femmes	Male and Female — Garçons et filles	
Under $3—Au-dessous de $3	44	1	1	46	2	–	–	2
$3 but under $4—$3 mais moins de $4	81	3	5	89	22	1	–	23
$4 but under $5—$4 mais moins de $5	26	3	5	34	10	–	–	10
$5 but under $6—$5 mais moins de $6	40	3	4	47	6	–	–	6
$6 but under $7—$6 mais moins de $7	35	2	2	39	1	–	–	1
$7 but under $8—$7 mais moins de $8	44	1	–	45	1	–	–	1
$8 but under $9—$8 mais moins de $9	46	2	–	48	4	–	–	4
$9 but under $10—$9 mais moins de $10	31	2	–	33	4	–	–	4
$10 but under $12—$10 mais moins de $12	197	7	5	209	1	–	–	1
$12 but under $15—$12 mais moins de $15	479	4	–	483	4	–	–	4
$15 but under $20—$15 mais moins de $20	1,332	8	4	1,344	11	–	2	13
$20 but under $25—$20 mais moins de $25	1,678	2	–	1,680	76	–	–	76
$25 and over—$25 et plus	1,548	–	–	1,548	149	–	–	149
Totals—Totaux	**5,581**	**38**	**26**	**5,645**	**291**	**1**	**2**	**294**

Wage Classes — Classes de salaires	Ontario				P. E. Island — Ile du Prince-Edouard			
	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total
	Male — Hommes	Female — Femmes	Male and Female — Garçons et filles		Male — Hommes	Female — Femmes	Male and Female — Garçons et filles	
Under $3—Au-dessous de $3	33	1	1	35	–	–	–	–
$3 but under $4—$3 mais moins de $4	16	1	2	19	–	–	–	–
$4 but under $5—$4 mais moins de $5	11	–	–	11	–	–	–	–
$5 but under $6—$5 mais moins de $6	25	1	–	26	–	–	–	–
$6 but under $7—$6 mais moins de $7	20	–	2	22	–	–	–	–
$7 but under $8—$7 mais moins de $8	12	1	–	13	1	–	–	1
$8 but under $9—$8 mais moins de $9	27	2	–	29	–	–	–	–
$9 but under $10—$9 mais moins de $10	8	2	–	10	–	–	–	–
$10 but under $12—$10 mais moins de $12	42	6	5	53	–	–	–	–
$12 but under $15—$12 mais moins de $15	82	4	–	86	3	–	–	3
$15 but under $20—$15 mais moins de $20	516	8	–	524	13	–	–	13
$20 but under $25—$20 mais moins de $25	882	2	–	884	–	–	–	–
$25 and over—$25 et plus	797	–	–	797	–	–	–	–
Totals—Totaux	**2,471**	**28**	**10**	**2,509**	**17**	**–**	**–**	**17**

—Main-d'œuvre.

Tableau 32.—Ouvriers de toutes usines, groupés selon leur salaire hebdomadaire au 15 décembre 1918. (Usines électriques centrales, 1er janvier 1919)—fin.

British Columbia — Col. Britannique				Manitoba				New Brunswick — Nouveau-Brunswick				Nova Scotia — Nouvelle-Ecosse			
16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total
Male — Hommes	Female — Femmes	Male and Female — Garçons et filles	—	Male — Hommes	Female — Femmes	Male and Female — Garçons et filles	—	Male — Hommes	Female — Femmes	Male and Female — Garçons et filles	—	Male — Hommes	Female — Femmes	Male and Female — Garçons et filles	—
–	–	–	–	2	–	–	2	–	–	–	–	1	–	–	1
1	–	–	1	–	1	–	1	2	–	–	2	–	–	–	–
–	–	–	–	1	2	–	3	–	–	–	–	–	1	–	1
–	–	–	–	2	2	–	4	–	–	–	–	2	–	–	2
–	–	–	–	–	2	–	2	–	–	–	–	–	–	–	–
2	–	–	2	1	–	–	1	–	–	–	–	3	–	–	3
–	–	–	–	1	–	–	1	1	–	–	1	4	–	–	4
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	–	–	1	1	–	–	1	–	–	–	–	9	1	–	10
6	–	–	6	–	–	–	–	5	–	–	5	16	–	–	16
8	–	–	8	56	–	–	56	42	–	–	42	24	–	2	26
75	–	–	75	83	–	–	83	45	–	–	45	88	–	–	88
256	–	–	256	65	–	–	65	19	–	–	19	37	–	–	37
349	–	–	349	212	7	–	219	114	–	–	114	184	2	2	188

Quebec — Québec				Saskatchewan				Yukon			
16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total	16 years of age and over — 16 ans et plus		Under 16 years — Au-dessous de 16 ans	Total
Male — Hommes	Female — Femmes	Male and female — Garçons et filles		Male — Hommes	Female — Femmes	Male and female — Garçons et filles		Male — Hommes	Female — Femmes	Male and female — Garçons et filles	
6	–	–	6	–	–	–	–	–	–	–	–
38	–	3	41	1	–	–	1	1	–	–	1
4	–	5	9	–	–	–	–	–	–	–	–
3	–	4	7	2	–	–	2	–	–	–	–
5	–	–	5	9	–	–	9	–	–	–	–
17	–	–	17	1	–	–	1	6	–	–	6
8	–	–	8	1	–	–	1	–	–	–	–
16	–	–	16	3	–	–	3	–	–	–	–
137	–	–	137	6	–	–	6	–	–	–	–
349	–	–	349	14	–	–	14	–	–	–	–
640	–	–	640	22	–	–	22	–	–	–	–
374	–	–	374	55	–	–	55	–	–	–	–
156	–	–	156	68	–	–	68	1	–	–	1
1,753	–	**12**	**1,765**	**182**	–	–	**182**	8	–	–	8

Fuel Consumption.—

Table 33.—In Generating Stations. (Central Electric Stations, January 1, 1919).

Provinces	Bituminous Coal Slack — Houille bitumineuse menue				Bituminous Coal lump — Houille bitumineuse morceaux				Bituminous Coal run of mine — Houille bitumineuse tout venant			
	Canadian — Canadienne		Foreign — Etrangère		Canadian — Canadienne		Foreign — Etrangère		Canadian — Canadienne		Foreign — Etrangère	
	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur
		$		$		$		$		$		$
Canada	**111,463**	**147,594**	**61,050**	**415,692**	**29,888**	**186,371**	**9,792**	**78,442**	**62,272**	**391,301**	**28,775**	**228,566**
Alberta	34,664	103,355			2,215	8,532			5,764	32,987		
Br. Columbia	7,847	31,663			2,544	18,149			3,100	18,208		
Manitoba	248	1,090	9,345	96,446	9	110	400	3,800	4,267	27,431	9,017	85,661
New Brunswick	4,423	25,337	167	845	15,812	108,312			8,824	57,859	62	741
Nova Scotia	34,689	109,458			9,235	50,407			33,589	202,823		
Ontario			47,044	306,053			9,314	73,445			15,097	101,726
Pr. Edw. Island									600	7,143		
Québec	150	1,500	4,494	42,348					320	3,357	4,599	40,438
Saskatchewan	28,946	170,977			73	861	78	1,197	5,808	41,493		
Yukon	496	4,214										

Provinces	Gasoline — Gazoline				Oil Fuel — Pétrole				Wood — Bois			
	Canadian — Canadienne		Foreign — Etrangére		Canadian — Canadien		Foreign — Etranger		Canadian — Canadien		Foreign — Etranger	
	Quantity gal. — Quantité gal.	Value — Valeur	Quantity gal. — Quantité gal.	Value — Valeur	Quantity gal. — Quantité gal.	Value — Valeur	Quantity ton — Quantité gal.	Value — Valeur	Quantity cord. — Quantité cord.	Value — Valeur	Quantity cord. — Quantité cord.	Value — Valeur
		$		$		$		$		$		$
Canada	**16,519**	**5,758**	**810**	**310**	**385,768**	**69,237**	**153,314**	**20,813**	**11,000**	**55,009**		
Alberta	1,800	720			2,500	950			16	40		
Br. Columbia	606	90			115,383	14,351	91,270	9,651	1,910	5,192		
Manitoba	5,021	1,860			26,836	7,396			2,874	20,113		
New Brunswick					70,000	11,450			2,300	8,600		
Nova Scotia					2,830	396			244	2,683		
Ontario	823	328	110	45	1,755	333			2,409	11,476		
Pr. Edw. Island												
Québec	2,400	1,010	500	175	7,475	2,371			261	1,130		
Saskatchewan	5,869	1,750	200	90	158,989	31,990	62,044	11,162	355	1,375		
Yukon									631	4,400		

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Consommation de combustible.

Tableau 33.—Dans les usines productrices d'électricité.
(Usines électriques centrales, 1er janvier 1919.)

Anthracite Coal — Anthracite				Lignite Coal — Lignite				Coke — Coke			
Canadian — Canadien		Foreign — Etranger		Canadian — Canadien		Foreign — Etranger		Canadian — Canadien		Foreign — Etranger	
Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur	Quantity ton — Quantité tonnes	Value — Valeur
	$		$		$		$		$		$
910	**1,820**	**12,386**	**120,425**	**176,707**	**457,193**	.....	.....	**101**	**1,091**	.....	.....
910	1,820	40	530	100,993	172,528	.....	.....	32	272	.....	.....
.....	.....	165	2,018	14,638	57,502	.....	.....	.....	.....	.....	.....
.....	.....	1,469	16,158	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	150	1,950	.....	.....	.....	.....	60	720	.....	.....
.....	.....	1,230	13,168	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	1,151	18,163	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	5,910	39,619	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	2,271	28,819	61,076	227,163	.....	.....	9	99	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Gas. — Gaz.				Other Fuel — Autre combustible		Total		Grand total
Canadian — Canadien		Foreign — Etranger		Canadian — Canadien	Foreign — Etranger	Canadian — Canadien	Foreign — Etranger	
Quantity 1,000 cu. ft. — Quantité 1,000 pd. cu.	Value — Valeur	Quantity 1,000 cu. ft. — Quantité 1,000 pd. cu.	Value — Valeur	Value — Valeur	Value — Valeur	Value — Valeur	Value — Valeur	Value — Valeur
	$		$	$	$	$	$	$
6,771,837	**50,778**	.....	.....	**60,317**	**22**	**1,726,472**	**894,270**	**2,620,742**
6,583,577	24,269	.....	.....	2,675	.....	348,148	530	348,678
.....	.....	.....	.....	3,820	.....	91,473	9,651	101,124
.....	.....	.....	.....	.....	.....	115,502	187,925	303,427
68,540	17,135	.....	.....	.....	.....	228,693	17,744	246,437
.....	.....	.....	.....	313	.....	366,800	1,950	368,750
119,720	9,374	.....	.....	40,728	22	62,239	494,459	556,698
.....	.....	.....	.....	.....	.....	7,143	18,163	25,306
.....	.....	.....	.....	.....	.....	9,368	122,580	131,948
.....	.....	.....	.....	12,781	.....	488,492	41,268	529,760
.....	.....	.....	.....	.....	.....	8,614	.....	8,614

Table 34.—Total by Provinces and by Class of Station.
(Central Electric Stations, January 1, 1919).

Provinces	Number of Stations — Nombre d'usines	Capital Invested — Capitaux engagés		
		Total	Power Development Transmission and Distribution — Production de la force motrice, transmission et distribution	Miscellaneous supplies, Cash Trading and operating accounts and Bills receivable — Approvisionnements divers, fonds de roulement, caisse et comptes courants
1	2	3	4	5
		$	$	$
Canada	**795**	**401,942,402**	**356,547,217**	**45,395,185**
Alberta—Alberta	53	12,777,082	12,416,024	361,058
British Columbia—Colombie Britannique	60	39,446,950	37,441,624	2,005,326
Manitoba—Manitoba	29	15,020,868	14,594,824	426,042
New Brunswick—Nouveau-Brunswick	25	3,564,542	3,275,292	289,250
Nova Scotia—Nouvelle-Ecosse	39	3,977,311	3,637,191	340,120
Ontario—Ontario	366	178,788,085	157,712,233	21,075,852
Prince Edward Island—Ile du Prince-Edouard	9	403,761	366,828	36,933
Quebec—Québec	149	138,374,304	118,015,751	20,358,733
Saskatchewan—Saskatchewan	61	6,083,198	5,804,331	278,867
Yukon—Yukon	4	3,506,303	3,283,299	223,004
				Class of Station—
Total Commercial—Total, commerciales	**377**	**288,151,605**	**250,591,215**	**37,560,390**
Total Municipal—Total, municipales	**418**	**113,790,797**	**105,956,002**	**7,834,795**
Commercial Hydro—Commerciales, hydrauliques	205	254,482,854	220,390,739	34,092,115
Municipal Hydro—Municipales, hydrauliques	75	72,195,662	68,074,474	4,121,188
Commercial Fuel—Commerciales à combustible	127	24,428,656	21,657,793	2,770,863
Municipal Fuel—Municipales, à combustible	108	13,546,074	12,799,582	746,492
Commercial Non-generating—Commerciales, non productrices	45	9,240,095	8,542,683	697,412
Municipal Non-generating—Municipales, non productrices	235	28,049,061	25,081,946	2,967,115

Résumé général des statistiques.

Tableau 34.—Total par provinces et par catégories d'usines.
(Usines électriques centrales, 1er janvier 1919).

Operating Expenses — Dépenses d'exploitation					Revenue from Sale of Power — Recettes de vente d'électricité		
Total	Salaried employees and wage earners — Personnel des bureaux et main-d'œuvre		Fuel — Combustible	All other Sundry Expenses — Toutes autres dépenses diverses	Total	For Lighting Purposes — Pour l'éclairage	For All other Purposes — Pour tous autres usages
	Average number of persons employed during the Year — Nombre moyen des personnes, employées durant l'année	Total Salaries and Wages — Total des traitements, appointements et salaires					
6	7	8	9	10	11	12	13
$		$	$	$	$	$	$
30,265,864	**9,696**	**10,354,242**	**2,626,132**	**17,285,490**	**53,549,133**	**16,952,512**	**36,596,621**
1,450,421	417	549,074	348,778	552,569	2,294,361	1,196,623	1,097,738
2,627,496	634	856,558	101,124	1,669,814	4,553,310	2,028,348	2,524,962
934,024	438	507,237	303,427	123,360	2,236,595	1,321,219	915,376
660,035	178	191,585	246,437	222,012	842,186	576,847	265,339
1,022,762	275	235,705	368,750	418,307	1,227,972	872,159	355,813
15,180,287	4,431	4,641,240	556,698	9,982,349	25,376,520	6,152,070	19,224,450
56,957	28	19,638	25,306	12,013	70,392	64,362	6,030
7,140,456	2,943	2,922,806	137,238	4,080,412	15,337,376	3,663,738	11,673,638
1,106,779	327	376,322	529,760	200,697	1,489,893	1,021,722	468,171
86,647	25	53,776	8,614	24,257	120,528	55,424	65,104
—Catégories d'usines.							
16,851,623	**5,690**	**6,137,525**	**1,505,732**	**9,208,366**	**33,190,882**	**8,638,648**	**24,552,234**
13,414,241	**4,006**	**4,216,717**	**1,120,400**	**8,077,124**	**20,358,251**	**8,313,864**	**12,044,387**
10,303,522	4,033	4,444,046	328,512	5,530,964	25,450,907	4,282,065	21,168,842
5,153,332	1,671	1,888,672	48,263	3,216,397	8,457,513	1,483,461	6,974,052
4,538,872	1,261	1,228,015	1,173,468	2,137,389	4,783,547	2,699,686	2,083,861
2,644,930	780	909,755	1,054,280	680,895	3,509,468	2,441,578	1,067,890
2,009,229	396	465,404	3,752	1,540,013	2,956,428	1,656,897	1,299,531
5,615,979	1,555	1,418,290	17,857	4,179,832	8,391,270	4,388,825	4,002,445

Table 34.—Total by Provinces and by Class of Station (Central Electric Stations, January 1, 1919)—Concluded.

Provinces	Steam Engines and Steam Turbines — Machines à vapeur et turbines à vapeur					
	Total		Reciprocating Engines — Machines à vapeur		Turbines — Turbines à vapeur	
	No. of Units — Nombre d'unités	Capacity in H.P. — Capacité en ch.-vap.	No. of Units — Nombre d'unités	Capacity in H.P. — Capacité en ch.-vap.	No. of Units — Nombre d'unités	Capacity in H.P — Capacité en ch.-vap.
	14	15	16	17	18	19
Canada	**255**	**145,637**	**218**	**54,784**	**37**	**90,853**
Alberta—Alberta	57	41,975	47	12,275	10	29,700
British Columbia—Colombie Britannique	20	4,326	19	3,696	1	630
Manitoba—Manitoba	17	2,690	17	2,690	–	–
New Brunswick—Nouveau-Brunswick	23	10,510	20	6,555	3	3,955
Nova Scotia—Nouvelle-Ecosse	42	15,811	39	9,791	3	6,020
Ontario—Ontario	42	33,625	37	8,455	5	25,170
Prince Edward Island—Ile du Prince-Edouard	2	425	2	425	–	–
Quebec—Québec	21	9,740	16	4,190	5	5,550
Saskatchewan—Saskatchewan	29	26,315	20	6,647	9	19,668
Yukon—Yukon	2	220	1	60	1	160
Class of Station—						
Total Commercial—Total, commerciales	**141**	**83,740**	**121**	**32,025**	**20**	**51,715**
Total Municipal—Total, municipales	**114**	**61,897**	**97**	**22,759**	**17**	**39,138**
Commercial Hydro—Commerciales, hydrauliques	–	–	–	–	–	–
Municipal Hydro—Municipales, hydrauliques	–	–	–	–	–	–
Commercial Fuel—Commerciales à combustible	141	83,740	121	32,025	20	51,715
Municipal Fuel—Municipales à combustible	114	61,897	97	22,759	17	39,138
Commercial Non-generating—Commerciales, non productrices	–	–	–	–	–	–
Municipal Non-generating—Municipales, non productrices	–	–	–	–	–	–

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—Résumé général des statistiques.

Tableau 34.—Total par provinces et par catégories d'usines.
(Usines électriques centrales, 1er janvier 1919)—fin.

Gas or Oil Engines — Moteurs à gaz ou à pétrole		Water Wheels and Turbines — Roues hydrauliques et turbines		Dynamos						Auxiliary Plant Equipment — Machinerie des usines auxiliaires			
				Total		D.C. — Courant direct		A.C. — Courant alternatif		Primary Power — Energie primaire		Dynamos	
No. of Units — Nombre d'unités	Capacity in H.P. — Capacité en ch.-vap.	No. of Units — Nombre d'unités	Capacity in H.P. — Capacité en ch.-vap.	No. of Units — Nombre d'unités	Capacity in K.V.A. — Capacité en K.V.A.	No. of Units — Nombre d'unités	Capacity in K.V.A. — Capacité en K.V.A.	No. of Units — Nombre d'unités	Capacity in K.V.A. — Capacité en K.V.A.	No. of Units — Nombre d'unités	Capacity in H P. — Capacité en K.V.A.	No. of Units — Nombre d'unités	Ceapcity in K.V.A. — Capacité en K.V.A.
20	21	22	23	24	25	26	27	28	29	30	31	32	33
134	**13,286**	**620**	**1,682,191**	**990**	**1,433,722**	**141**	**12,494**	**849**	**1,421,228**	**76**	**117,528**	**54**	**91,811**
13	1,340	14	32,600	78	58,193	10	1,706	68	56,487	4	2,405	4	1,950
12	1,815	54	211,043	91	138,225	6	635	85	137,590	14	26,780	14	20,915
11	662	16	71,790	44	50,961	10	352	34	50,609	11	19,400	11	13,750
5	1,075	15	6,978	44	12,836	7	846	37	11,990	2	500	–	–
2	140	15	3,614	66	18,235	11	683	55	17,552	5	750	3	456
16	2,367	284	744,221	331	628,109	44	4,414	287	623,695	21	39,530	14	32,911
4	701	6	227	12	1,321	1	60	11	1,261	–	–	–	–
8	286	214	601,718	228	492,467	21	2,212	207	490,255	19	28,163	8	21,829
63	4,900	–	–	91	27,195	29	1,556	62	25,639	–	–	–	–
–	–	2	10,000	5	6,180	2	30	3	6,150	–	–	–	–

—Catégories d'usines.

66	**4,800**	**466**	**1,345,656**	**659**	**1,118,438**	**101**	**9,849**	**558**	**1,108,589**	**56**	**110,853**	**39**	**87,215**
68	**8,486**	**154**	**336,535**	**331**	**315,284**	**40**	**2,645**	**291**	**312,639**	**20**	**6,675**	**15**	**4,596**
–	–	466	1,345,656	437	1,044,924	29	2,784	408	1,042,140	55	110,523	38	87,040
–	–	154	336,535	147	256,300	6	433	141	255,867	20	6,675	15	4,596
66	4,800	–	–	222	73,514	72	7,065	150	66,449	1	330	1	175
68	8,486	–	–	184	58,984	34	2,212	150	56,772	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–

CANADA

BUREAU FÉDÉRAL DE LA STATISTIQUE

RECENSEMENT INDUSTRIEL, 1918

Usines Electriques Centrales du Canada

Préparé en collaboration avec la division des Forces Hydrauliques du Dominion, du ministère de l'Intérieur, et avec le concours de la Commission Hydro-Electrique d'Ontario, la Commission des Eaux Courantes de Québec, la Commission des Forces Hydrauliques du Nouveau-Brunswick et la Commission des Forces Hydrauliques de la Nouvelle-Ecosse

IMPRIMÉ PAR ORDRE DU PARLEMENT

OTTAWA
THOMAS MULVEY
IMPRIMEUR DE SA TRÈS EXCELLENTE MAJESTÉ LE ROI
1920

RECENSEMENT INDUSTRIEL, 1918.

USINES ÉLECTRIQUES CENTRALES.

PRÉFACE.

Les données statistiques que contient ce rapport sur l'industrie de la production électrique au Canada ont été recueillies et compilées conjointement par le Bureau Fédéral de la Statistique et la division des Forces Hydrauliques du Dominion, du ministère de l'Intérieur, agissant de concert conformément aux dispositions de la Loi de la Statistique, et avec le concours de la Commission Hydro-Electrique d'Ontario, de la Commission des Eaux Courantes de Québec, de la Commission des Forces Hydrauliques du Nouveau-Brunswick et de la Commission des Forces Hydrauliques de la Nouvelle-Ecosse. Les informations ont été colligées par le Bureau Fédéral de la Statistique, aidé en cela par les organisations provinciales plus haut nommées, et le rapport qui les condense a été rédigé, toujours en vertu de la Loi de la Statistique, par M. J. T. Johnston, directeur-adjoint du service des Forces Hydrauliques, secondé par M. N. E. D. Sheppard, ingénieur du même service. A tous ceux qui lui ont prêté leur concours, le Bureau Fédéral de la Statistique offre ses sincères remerciements.

Il n'est question, dans ce rapport, que des industries produisant l'énergie électrique pour la vendre; celles qui la fabriquent pour les besoins de leur propre consommation en sont exclues.

Les résultats qui sont révélés ci-après sont une preuve manifeste du développement considérable de l'industrie électrique, l'une des plus importantes de ce pays et démontrent que les forces hydrauliques du Canada ont été un facteur essentiel de cet accroissement.

Il a été procédé récemment à un inventaire des forces hydrauliques utilisées au Canada, duquel il ressort que 72·7 pour cent des chutes d'eau captées dans la Puissance sont absorbées par les usines productrices d'électricité.

Des difficultés assez sérieuses avaient été éprouvées en 1917 pour obtenir de certaines usines les informations détaillées requises par les formules du recensement, mais ces difficultés ont été presque entièrement éliminées depuis lors, les industriels soumis au recensement ayant mieux compris la raison d'être et l'utilité de cet inventaire annuel. Nous croyons que le travail présentement publié est aussi complet et aussi exact que la complexité du sujet permet de l'espérer, et qu'il fournira une base sûre de comparaison avec les rapports futurs.

R. H. COATS,
Statisticien du Dominion.

Bureau Fédéral de la Statistique,
Ottawa, 29 mai 1920.

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L'INDUSTRIE ÉLECTRIQUE AU CANADA EN 1918.

INTRODUCTION ET RÉSUMÉ.

La première analyse statistique détaillée de l'industrie électrique au Canada est sortie du recensement industriel de 1917, un rapport spécial ayant présenté au public, sous une forme nouvelle, les éléments essentiels constitutifs de cette industrie, ses caractéristiques et le développement par elle acquis jusqu'à la date du 1er janvier 1918. Dans sa partie introductive, ce rapport contenait une brève allusion aux origines relativement récentes de la production électrique et à son développement extraordinairement rapide depuis la construction des premières usines centrales, qui commencèrent leurs opérations en 1881 et 1882. On ne peut, toutefois, acquérir une compréhension exacte du rôle prépondérant de l'énergie électrique, aussi bien sur le mouvement industriel que dans la vie domestique, que par l'étude de statistiques telles que celles que nous présentons aujourd'hui.

Ce second rapport analytique sur les usines électriques centrales nous conduit jusqu'au 1er janvier 1919; il révèle une activité croissante dans la production et la consommation de l'électricité utilisée soit pour l'éclairage, soit comme force motrice. La preuve de cette activité réside dans l'installation d'unités additionnelles et dans la substitution d'une machinerie moderne et plus puissante aux anciennes machines des usines centrales; dans la réorganisation des compagnies exploitant ces usines; dans l'extension des réseaux de distribution; enfin et surtout dans les projets d'agrandissement des usines existantes. En dehors de l'évidence résultant des données du recensement, ces progrès se manifestent encore par le grand nombre d'usines électriques actuellement en voie de construction au Canada ou qui le seront bientôt.

Parmi les usines en cours de construction, on peut citer, entre les plus importantes, celles bâties au pied des chutes de Chippawa-Queenston, de Nipigon et de High Falls, dépendant de la Commission Hydro-Electrique d'Ontario; l'usine de Drummondville de *the Southern Canada Power Company* et celle des chutes de la Chaudière, de *the Ottawa and Hull Power and Manufacturing Company,* ces deux dernières dans la province de Québec; la captation de *the Northeast and Indian River,* par la Commission des Forces Hydrauliques de la Nouvelle-Ecosse, près d'Halifax, enfin la captation de Great Falls, par *the Winnipeg River Power Company,* au Manitoba. Ces différents établissements développeront, tous ensemble, une force de 587,600 chevaux-vapeur. Outre ceux-ci, il existe nombre d'autres usines plus petites, hydrauliques ou autres, en voie de construction, notamment à Lawrencetown, en Nouvelle-Ecosse; à Hampton, au Nouveau-Brunswick; à la Rivière-du-Loup et à Armagh, dans Québec, et à Lloydminster, en Saskatchewan.

Nature et cadre du présent rapport.

Au point de vue du recensement, une usine électrique centrale est celle qui vend ou qui distribue l'énergie électrique destinée à l'éclairage, au chauffage, ou servant de force motrice. Les usines électriques centrales peuvent être divisées en deux catégories, savoir: celles qui produisent l'électricité qu'elles vendent et celles qui ne la produisent pas, mais qui l'achètent aux producteurs pour la revendre. Partant de cette définition, chacune des usines génératrices appartenant à une compagnie ou organisation est considérée isolément, comme si elle avait une existence propre; d'autre part, chaque organisation séparée distribuant l'énergie électrique est envisagée comme une station distincte.

Fréquemment, l'exploitation des usines électriques centrales est conduite de pair avec quelque autre industrie, par exemple, une entreprise de tramways électriques, l'exploitation de mines, papeteries, pulperies, etc.; et, en maintes circonstances, la machinerie des petites scieries et des petits moulins à farine sert, le soir, à produire de l'électricité pour l'éclairage. Dans ces cas-là, la relation de la production électrique par rapport à l'ensemble des opérations, varie grandement; souvent, les opérations de l'usine électrique ne représentent qu'une minime fraction de la production industrielle et tantôt cette exploitation constitue l'élément essentiel. Invariablement on a insisté auprès des industriels afin de les amener à établir une démarcation entre leurs diverses entreprises et à se limiter aux informations concernant uniquement leur usine d'électricité. Les données fournies ont été scrutées et vérifiées avec le plus grand soin, et même comparées à d'autres informations puisées à différentes sources, afin d'éliminer des statistiques, dans la mesure du possible, toute erreur susceptible de provenir de cette cause.

Les statistiques traitent donc uniquement des usines électriques centrales. Lorsque des compagnies exploitant des mines, un réseau de tramways, des papeteries ou pulperies, ou bien se livrant aux opérations de coupe de bois ou possédant des manufactures quelconques, accessoirement à leur industrie principale, se livrent à la distribution d'énergie électrique pour des besoins autres que les leurs, ces compagnies sont mises au rang d'usine électrique centrale, à cause de cette distribution. Mais les compagnies qui produisent de l'électricité uniquement pour les besoins de leur propre industrie, ont été laissées en dehors du recensement.

Dans un certain nombre d'usines électriques exploitées concurremment avec des tramways, des papeteries et pulperies ou des mines, la production de l'électricité est confiée à une organisation distincte qui possède sa propre comptabilité et qui est créditée de la valeur de l'énergie qu'elle fournit à l'industrie apparentée. Lorsqu'il en est ainsi, cet établissement est classé, au point de vue du recensement, parmi les usines électriques centrales, et ses opérations tout entières figurent au rapport.

La facile adaptation du courant électrique à la transmission à longue distance crée un enchevêtrement dans les conditions de cette industrie, dont on pourra se former une idée par l'exposé ci-après des situations les plus complexes en ce pays.

Certaines des grosses compagnies d'électricité ne se bornent pas à produire de l'énergie électrique pour la vendre; elles achètent aussi du courant, en bloc, à d'autres compagnies de distribution et, à leur tour, vendent du courant, en bloc, à différentes autres usines électriques centrales. Dans un cas particulier, la compagnie exploite sa propre usine électrique; exploite, en vertu d'un arrangement, l'usine d'une autre organisation; exploite un réseau très étendu de lignes de transmission; vend du courant électrique aussi bien que de l'énergie mécanique directement aux consommateurs; vend de l'électricité, en bloc, à ses compagnies subsidiaires qui, elles-mêmes, exploitent leur propre usine génératrice; enfin vend aussi du courant, en bloc, à d'autres usines électriques centrales indépendantes. Il est à remarquer que son électricité est vendue, en bloc, à des compagnies exploitant de grands réseaux de distribution presque aussi complexes que celui qui nous occupe. Voici un autre mode d'opérer quelque peu différent: plusieurs compagnies subsidiaires ou filiales, dont chacune possède son usine génératrice, vendent la presque totalité de leur production respective à leur compagnie-mère, qui remplit l'office de compagnie de distribution, vendent de l'énergie non seulement directement aux consommateurs, mais aussi en bloc à d'autres usines centrales électriques. Dans Ontario, le réseau de la Commission Hydro-Electrique présente un autre exemple frappant d'un système compliqué. Le plan général des opérations, qui embrasse l'usine principale et les lignes de transmission, exploitées par la commission provinciale, l'achat d'électricité, en bloc, à d'autres usines productrices et la distribution de l'énergie électrique aux commissions municipales locales, est bien connu et n'a pas besoin d'être plus amplement expliqué. Chacune des entreprises

municipales locales est considérée comme étant une usine centrale électrique distincte, généralement de la catégorie non productrice, avec toutefois certaines exceptions, en faveur de celles qui produisent de l'électricité, en même temps qu'elles achètent du fluide à la commission provinciale. Un autre cas prêtant à confusion est celui d'une compagnie qui exploite deux entreprises distinctes; elle achète toute l'énergie électrique consommée sur l'un de ses réseaux et produit une partie de celle qu'elle distribue par son second réseau. Pour approvisionner son premier réseau, cette compagnie achète la production totale des deux usines que possède une compagnie subsidiaire, plus une portion considérable de la production d'une autre organisation séparée et indépendante. Son second réseau est alimenté par une usine électrique qu'elle exploite elle-même et aussi par la totalité de la production d'une autre usine appartenant à sa filiale.

Outre cet enchevêtrement d'usines qui, quoique compliquant les opérations du recensement, ne sort pas du domaine des usines électriques, il faut encore compter avec les nombreux cas d'usines exploitées concurremment avec d'autres industries.

Les détails qui précèdent démontrent combien le dépouillement des formules du recensement est chose délicate, si l'on veut éviter toute confusion et dresser un bilan clair et exact.

Le recensement de 1918 a englobé un plus grand nombre d'établissements que celui de 1917; cette augmentation n'est pas due entièrement à la création de nouvelles usines; elle résulte également de l'addition d'usines qui fonctionnaient en 1917, mais qui ont différé leur réponse au questionnaire, de telle sorte que les informations les concernant sont arrivées trop tard pour figurer au rapport précédent. D'autre part, les compilateurs ont réussi à débrouiller et tirer au clair le système d'organisation de quelques-unes des plus vastes entreprises, ce qui leur a permis d'individualiser des usines qui avaient été grouées, l'année dernière, comme appartenant au même propriétaire.

Les détails concernant la machinerie de chaque usine centrale, accompagnés d'autres données utiles, ont été publiés dans le Répertoire des Usines Electriques Centrales du Canada, formant la deuxième partie du rapport sur le recensement de l'industrie électrique de 1917.[1] Ce répertoire a été mis à jour au 1er janvier 1919; il sera revisé et réimprimé périodiquement; les additions contenues dans le présent rapport statistique figureront dans la prochaine édition, avec les autres changements survenus.

On a compilé et analysé les statistiques de manière à faciliter la comparaison entre les usines appartenant à des industriels, particuliers ou compagnies, et celles des municipalités ou des commissions gouvernementales; entre les usines hydrauliques et celles qui emploient du combustible; et entre celles qui produisent l'électricité et celles qui l'achètent pour la revendre. Sous le nom d'usines municipales, on a fait figurer aussi les usines des commissions provinciales et du gouvernement fédéral. Le nom d'usines commerciales a été donné à toutes celles exploitées par des particuliers, des sociétés en nom collectif ou des compagnies incorporées. Les statistiques consacrées aux usines hydro-électriques embrassent les détails relatifs aux usines principales aussi bien qu'aux usines auxiliaires. La catégorie des usines fonctionnant au moyen de combustible comprend les établissement dont le combustible est la source unique actionnant les machines génératrices: machines à vapeur, turbines à vapeur, moteurs à gaz et à pétrole. La subdivision entre les usines productrices et celles non-génératrices a pour but de séparer les industries qui produisent l'électricité, de celles qui l'achètent.

Dans le rapport de cette année, les détails relatifs au matériel fournissant la force motrice primaire des usines auxiliaires, occupent une plus grande place que l'an

(1) On peut se procurer des exemplaires du Répertoire des Usines Electriques Centrales du Canada, en s'adressant au Directeur du Service des Forces Hydrauliques, ministère de l'Intérieur, Ottawa.

dernier. Ces usines auxiliaires ou de réserve contiennent une très importante machinerie, représentant une mise de fonds considérable. Etant donné que ces usines sont, sauf une seule exception, destinées à suppléer aux installations hydro-électriques et que les statistiques financières ne peuvent pas établir de distinction entre le coût de l'énergie produite par l'usine principale et celle dérivant de l'usine auxiliaire, on a analysé séparément l'équipement de ces usines auxiliaires et ils sont exclus des totaux, sauf lorsqu'il est expliqué qu'ils y figurent. Toutefois, les statistiques financières concernant ces usines auxiliaires ou supplémentaires ne forment qu'un seul tout avec celles des usines principales, qu'elles sont appelées à suppléer.

Résumé général.

Sommaire des principales caractéristiques. — Le tableau 1 présente une vue d'ensemble des usines électriques centrales et analyse leurs caractéristiques, telles que révélées par le recensement; il montre aussi la relation existant entre les usines commerciales et les usines municipales.

Les usines recensées, productrices aussi bien que non génératrices, ayant fonctionné au cours de l'année terminée le 31 décembre 1918, sont au nombre de 795, soit 129 de plus qu'au recensement de 1917, dont 515, ou 64·8 pour cent produisent l'électricté et 280 ou 35·2 pour cent l'achètent; 377 d'entre elles appartiennent à la catégorie des usines commerciales et 418 à celles des usines municipales. La prédominance des usines municipales est constituée par la classe des usines non productrice d'électricité; 64·5 pour cent de la classe productrice sont commerciales et 35·5 pour cent municipales, tandis que 16·1 pour cent seulement des usines non génératrices sont commerciales et 83·9 pour cent sont municipales. On verra, par le tableau 2, que la province d'Ontario possède à elle seule 204 usines municipales et non génératrices, soit près de 73 pour cent de leur totalité en ce pays; cette accumulation dans une seule province de ce genre d'usines est due à la Commission Hydro-Electrique d'Ontario, dont le réseau embrasse 194 usines centrales ne produisant pas l'électricité qu'elles emploient.

Cette industrie absorbe des capitaux se totalisant par $401,942,402, dont $356,547,217 représentent la valeur immobilière proprement dite, c'est-à-dire terrains, bâtiments et machineries, digues ou barrages, canaux de dérivation et ouvrages hydrauliques divers, les réseaux de transmission et de distribution, les sous-stations et postes de distribution; le surplus, soit $45,395,185 étant constitué par les matières première en mains et approvisionnements divers et les fonds de roulement: caisse, factures à recouvrer et billets à recevoir. Ces capitaux sont consacrés aux usines commerciales, à concurrences de $288,151,605 ou 71·7 pour cent et aux usines municipales, à concurrence de $113,790,797, ou 2·83 pour cent.

Les recettes provenant de la vente d'électricité, pour tous usages indistinctement, se sont élevées à $53,549,133, dont 31·7 pour cent ou $16,952,512 représentent le courant vendu pour l'éclairage et 68·3 pour cent, ou $36,596,621, l'énergie adaptée à tous autres usages.

La part des usines commerciales, dans ces recettes, a atteint $33,190,882, dont $8,638,648 fournis par l'éclairage, ou 26 pour cent et $24,552,234 ou 74 pour cent par tous autres usages. Les usines municipales ont encaissé $20,358,251, se subdivisant ainsi: éclairage, $8,313,864, ou 40·8 pour cent; tous autres usages, $12,044,387 ou 59·2 pour cent. Dans l'ensemble, 62·0 pour cent du chiffre global des recettes est entré dans la caisse des usines commerciales. Si l'on envisage maintenant la catégorie des usines, quel que soit leur propriétaire, on découvre que celles produisant l'électricité participent aux recettes totales pour $42,201,435 et celles qui ne la produisent pas, pour $11,347,698. Toutefois, cette dernière somme n'est pas constituée uniquement par la revente d'énergie électrique achetée en bloc; il y entre aussi la valeur de la production de certaines usines qui sont, tout à la fois, productrices et acheteuses d'électricité.

Quant aux dépenses d'exploitation, comprenant traitements, appointements et salaires, combustible et autres frais généraux tels que loyer de bureaux, achat de force motrice et d'électricité, primes d'assurance, taxes, réparations ordinaires aux bâtiments et machines, etc., elles ont atteint: pour toutes les usines, $30,265,864, dont $16,851,623, ou 55·7 pour cent, pour les usines commerciales et $13,414,241, ou 44·3 pour cent, pour les usines municipales.

Le personnel des usines commerciales se compose de 5,690 personnes, dont les traitements, appointements et salaires s'élèvent à $6,137,525; celui des usines municipales occupe 4,006 employés et ouvriers, ayant reçu $4,216,717.

Dans les dépenses d'exploitation est comprise une somme de $9,641,048, prix d'achat de fluide électrique acheté en bloc pour distribution; il est produit par les usines centrales dont les opérations entrent dans nos statistiques et vendu à d'autres usines centrales, soit qui en produisent elles-mêmes soit qui le distribuent. Entre toutes les usines qui achètent du courant à d'autres, 8·5 pour cent seulement en produisent elles-mêmes, et cependant les achats de cette catégorie d'usines égalent presque le volume de ceux des 280 usines non productrices; pour solder ces achats, les premières ont payé $4,564,596 et les secondes $5,076,452.

La totalité du matériel fournissant la force motrice primaire dans les usines principales a une capacité de 1,841,114 chevaux-vapeur, et celui des usines auxiliaires de 117,528 chevaux-vapeur, soit au total 1,958,642 chevaux-vapeur pour les unes et les autres. Cette distinction entre le matériel des usines principales et celui des usines auxiliaires a été maintenue du commencement à la fin de ce rapport de telle sorte que, à moins d'indication contraire formelle, lorsqu'il sera question de cette machinerie, ce sera uniquement celle de l'usine principale. Le résumé de la capacité totale des différents types de machines fournissant la force motrice primaire, joint à la nomenclature de ces unités dans les différents tableaux du rapport, fournissent des données complètes pour éclairer ce côté particulièrement intéressant des statistiques. Il est remarquable que, sur les 1,841,114 chevaux-vapeur des machines fournissant la force motrice primaire, 1,682,191 chevaux-vapeur ou 91·4 pour cent dérivent de l'eau, 145,637 chevaux-vapeur ou 7·9 pour cent sont produits par la vapeur et 13,286 chevaux-vapeur ou 0·7 pour cent par les moteurs à explosion.

Quant aux dynamos installées dans les usines principales, leur capacité est de 1,433,722 kilo-volt-ampères et celle des usines auxiliaires ou de réserve est de 91,811 kilo-volt-ampères, soit au total 1,525,533 kilo-volt-ampères pour l'ensemble.

Répartition territoriale—Genre d'usines.—Le tableau 2 est un relevé, d'abord pour l'ensemble du Canada, puis par provinces, des usines centrales électriques, par catégories et par classes; il offre des renseignements intéressants sur la situation de cette industrie dans les différentes provinces. Sur les 795 usines recensées, 366 ou 46·1 pour cent se trouvent dans la province d'Ontario, 149 ou 18·8 pour cent dans Québec, 61 ou 7·7 pour cent dans la Saskatchewan, 60 ou 7·5 pour cent en Colombie Britannique, 53 ou 6·7 pour cent dans l'Alberta, 39 ou 4·9 pour cent en Nouvelle-Ecosse, 29 ou 3·6 pour cent au Manitoba, 25 ou 3·1 pour cent au Nouveau-Brunswick, 9 ou 1·1 pour cent dans l'île du Prince-Edouard ou 4 ou 0·5 pour cent dans le territoire du Yukon.

On a déjà parlé plus haut des raisons de la prédominance de cette industrie dans Ontario, mais en jetant un coup d'œil sur la colonne 5 du tableau 2, on verra que sa suprématie ne réside pas uniquement dans le grand nombre d'usines distributrices qu'elle possède, car la province d'Ontario tient également la tête au point de vue des usines génératrices, avec 150 ou 29·1 pour cent du nombre total des 515 usines productrices d'électricité existant au Canada; la province de Québec occupe le second rang avec 114 usines génératrices, ou 22·1 pour cent de la totalité.

Les usines productrices d'électricité sont, de plus, classifiées, selon l'origine de leur pouvoir moteur. 280 d'entre elles ou 54·4 pour cent étant hydrauliques et 235 ou 46·6 pour cent consommant du combustible.

Relation de l'équipement des usines à la population.—La relation existant entre la puissance du matériel fournissant l'énergie primaire et la capacité des dynamos, d'une part, et le chiffre de la population canadienne, d'autre part, établie au tableau 3, fait ressortir d'une manière éclatante l'importance acquise au Canada par les forces hydrauliques, dans le développement des usines électriques centrales. A part le territoire du Yukon, qui ne peut être comparé aux provinces, tant à cause de sa population restreinte que du petit nombre de ses usines électriques qui vendent leur courant en bloc pour l'exploitation des usines, les cinq provinces suivantes: Alberta, Colombie Britannique, Manitoba, Ontario et Québec, qui trouvent dans les forces hydrauliques la plus grande partie des sources de production de leurs centrales, développent une moyenne de 249 chevaux-vapeur par 1,000 habitants. Par contre, les quatre autres provinces: Nouveau-Brunswick, Nouvelle-Ecosse, Ile du Prince-Edouard et Saskatchewan, qui tirent du combustible la majeure partie de leur électricité, ont une moyenne de 41 chevaux-vapeur par 1,000 habitants.

Pour juger de l'importance de la production d'électricité per capita, il n'y a pas d'autre base possible que celle de la population, par province. Les occupations de cette population et sa dissémination ou son groupement dans de grands centres sont un facteur essentiel de sa consommation d'électricité, qui influe directement sur la production du fluide. Ces considérations faciliteront la compréhension des différences entre les différentes provinces, au point de vue de la production per capita, que l'on trouvera dans le tableau 3.

Matériel fournissant la force motrice primaire.

Ainsi qu'on l'a dit plus haut, nous faisons figurer dans les tableaux de ce rapport des détails très élaborés au sujet du matériel fournissant la force motrice primaire installé dans les usines auxiliaires ou de réserve, en raison de l'importance considérable de l'outillage de ces sortes d'usines, qui nécessite une importante mise de fonds. Il faut d'ailleurs, considérer qu'en cas d'insuffisance de la production des usines principales, il arrive que les usines auxiliaires fonctionnent sans interruption, ainsi que cela s'est produit fréquemment en 1917, pour satisfaire aux besoins des fabriques de munitions.

Aperçu sommaire sur ce matériel.—Le tableau 4 est une nomenclature, tant pour le Canada que par provinces, des unités des différents types fournissant la force motrice primaire, ainsi que des dynamos, et de leur capacité individuelle et totale. Répétons que le matériel dont il est question est celui des usines principales, à l'exclusion de celui des usines auxiliaires; ce relevé embrasse d'abord tous les genres de machines sans distinction; deuxièmement, les machines et turbines à vapeur; troisièmement, les moteurs à gaz et à pétrole, et quatrièmement, les roues hydrauliques et turbines; enfin une énumération spéciale est consacrée aux dynamos installées dans les usines de toutes sortes. Les usines auxiliaires ou de réserve étant essentiellement actionnées au moyen de combustible, ce qui concerne les roues hydrauliques et turbines se rapporte uniquement aux usines principales.

Le matériel fournissant la force motrice primaire, de tous types, installé dans toutes les usines électriques centrales du Canada développe 1,958,642 chevaux-vapeur, dont 1,841,114 chevaux-vapeur dans les usines principales et 117,528 chevaux-vapeur dans les usines auxiliaires ou de réserve. Les machines et turbines à vapeur entrent dans ce total pour 262,562 chevaux-vapeur, dont 116,925 chevaux-vapeur installés dans les usines auxiliaires; les moteurs à gaz et à pétrole y figurent pour 13,889 chevaux-vapeur, dont 13,286 chevaux-vapeur dans les usines principales et 603 chevaux-vapeur dans les auxiliaires. Les dynamos ont une puissance de 1,525,533 kilo-volt-ampères, dont 91,811 kilo-volt-ampères dans les usines auxiliaires. Dans le même tableau, on peut voir la répartition de ce matériel par chaque province.

La figure 1 (*voir le frontispice*) nous montre sous une forme graphique la prépondérance formidable qu'exercent les forces hydrauliques du Canada dans nos usines électriques, par rapport au combustible, 91·4 pour cent du matériel fournissant l'énergie primaire aux usines principales, étant actionné par l'eau. Le diagramme 2 indique la répartition de ce matériel dans différentes provinces et le diagramme 3 établit, pour chacune des provinces, la relation existant entre la source d'énergie primaire dérivée de l'eau et celle produite par le combustible. (Voir page xiii.)

Genre de machines fournissant l'énergie primaire et leur répartition. — Dans le tableau 5 on trouve une comparaison entre le nombre d'unités et la capacité totale des différents types de machines fournissant l'énergie primaire installées dans les usines principales, avec indication du pourcentage de la capacité totale de chaque type par rapport à l'ensemble du matériel en fonctionnement. On remarquera que, pour l'ensemble de la Puissance, l'installation hydraulique absorbe 91·4 pour cent de la capacité combinée de toutes les unités et que dans cinq des dix provinces, les roues hydrauliques et turbines représentent 95 pour cent du total de chacune de ces provinces. D'autre part, la province de la Saskatchewan tire toute son énergie électrique du combustible: 84·3 pour cent de la vapeur et 15·7 pour cent des moteurs à gaz et à pétrole. Le minime pourcentage des forces hydrauliques utilisées en Nouvelle-Ecosse soit 18·5 pour cent ne doit pas être considéré comme un indice de la pauvreté de cette province en ressources hydrauliques. Lorsque les usines hydro-électriques actuellement en voie de construction dans cette province seront en fonctionnement, la proportion du pouvoir dérivé de cette source se trouvera considérablement accrue. Ce tableau présente un intérêt tout spécial du fait qu'il montre avec une grande clarté la répartition par provinces des différents types de machines fournissant l'énergie primaire; il suffit pour cela de jeter un coup d'œil sur les colonnes des pourcentages.

Le tableau 6 divise chaque espèce de machines, selon la catégorie des usines auxquelles elles appartiennent, et nous apprend ainsi que deux tiers du matériel fournissant l'énergie primaire sont installés dans les usines commerciales. Les machines à vapeur se trouvent dans les usines commerciales dans la proportion de 5 pour 1 dans les usines municipales, avec 57·5 pour cent de la capacité de ces unités dans les usines commerciales et 42·5 pour cent dans les usines municipales. Les machines hydrauliques installées dans les usines commerciales représentent un pourcentage beaucoup plus élevé, c'est-à-dire 75·2 pour cent des machines et 80·8 de la force motrice.

Sous une forme similaire à celle adoptée dans le tableau 5, le tableau 7 compare le nombre des unités et leur capacité, tant dans les usines commerciales que dans les usines municipales, avec le total pour toutes usines. Sur la capacité totale du matériel installé dans les usines principales, soit 1,841,114 chevaux-vapeur, 77·9 pour cent ou 1,434,196 chevaux-vapeur se trouvent dans les usines commerciales et représentent la capacité de 673 unités, sur un total de 1,009. Dans l'île du Prince-Edouard et le territoire du Yukon, la totalité du matériel des usines centrales, entre dans la catégorie des usines commerciales. Ces sortes d'usines, dans les autres provinces, possèdent les pourcentages suivants: Québec, 96·9 pour cent; Colombie Britannique, 94·0 pour cent; Nouveau-Brunswick, 87·3 pour cent; Nouvelle-Ecosse, 78·6 pour cent; Ontario, 66·2 pour cent, et Alberta, 66 pour cent. Dans la Saskatchewan 95·8 pour cent et au Manitoba 65·6 pour cent appartiennent aux usines municipales.

Une intéressante analyse du nombre d'usines productrices d'électricité, par type de machine fournissant l'énergie primaire ou par combinaison de différents types de cette machinerie, se trouve dans le tableau 8. Ces chiffres embrassent aussi bien les usines commerciales que les usines municipales. Sur un total de 515 usines productrices d'électricité, 122 ne contiennent que des machines à vapeur, 11 autres usines contiennent des machines à vapeur et des turbines à vapeur et 5 autres contiennent des machines à vapeur en même temps que des moteurs, soit à gaz soit à pétrole. Semblablement 8 usines ne contiennent que des turbines à vapeur, 11 possèdent des tur-

bines à vapeur et des machines à vapeur et une autre se sert de turbines à vapeur en même temps que de moteurs à gaz. En résumant les données contenues dans la colonne 2 de ce tableau on peut voir que 133 usines possèdent des machines à vapeur, 20 des turbines à vapeur, 94 des moteurs à gaz ou à pêtrole et 280 des roues hydrauliques ou des turbines. Sur le nombre des usines contenant des roues hydrauliques ou des turbines, 44 possèdent des usines auxiliaires ou de réserve qui fournissent un supplément de production ou bien sont prêtes à tout événement en cas d'accident à l'usine principale.

Tandis que l'on s'occupe des usines employant des types divers de machines fournissant l'énergie primaire, il est utile de rechercher la capacité moyenne de production de ces usines et la force moyenne, en chevaux-vapeur, des machines; c'est l'objet du tableau 9. La capacité moyenne de production par usine est basée sur le nombre des usines productrices d'électricité recensées, c'est-à-dire 515, tandis que la totalisation du nombre des usines dont on s'est servi pour la computation individuelle des différents types de machines est nécessairement un peu plus grande que le nombre des usines recensées puisqu'une usine possédant deux types différents de machines, y figure deux fois.

La moyenne de capacité des 515 usines recensées est de 3,575 chevaux-vapeur et la force moyenne, en chevaux-vapeur, des 1,009 machines fournissant l'énergie primaire dans ces usines est de 1,825 chevaux-vapeur; dans les usines commerciales la moyenne est de 4,320 chevaux-vapeur par usine et 2,131 chevaux-vapeur par machine: dans les usines municipales cette moyenne est de 2,224 chevaux-vapeur par usine et 1,211 chevaux-vapeur par machine, c'est-à-dire que d'une manière générale les usines municipales ont approximativement la moitié de la capacité de production des usines commerciales et que leurs machines ont un peu plus de la moitié de la force de celles des usines commerciales. La dissection de ces moyennes, appliquées à différents types de machines, révèle des faits intéressants. Par exemple la capacité moyenne de 280 usines génératrices hydro-électriques est de 6,008 chevaux-vapeur; de ce nombre 205 sont commerciales et possèdent une machinerie d'une force moyenne de 5,664 chevaux-vapeur, tandis que 75 sont municipales et leur machinerie a une force de 4,487 chevaux-vapeur. Quant aux usines à vapeur, la capacité moyenne par usine et par machine est à peu près la même dans les usines municipales et dans les usines commerciales. Ceci est dû dans une large mesure au fait qu'un certain nombre des usines à vapeur commerciales les plus importantes servent d'auxiliaires pour supplémenter la force hydro-électrique et, à ce titre, ne se trouvent pas comprises dans le champ d'analyse de ce tableau.

Les tableaux 10, 11 et 12 présentent une comparaison du matériel fournissant l'énergie primaire dans les usines principales, tant commerciales que municipales, pour chacun des différents types de machine; le premier de ces tableaux est consacré aux machines à vapeur et aux turbines à vapeur, le second aux moteurs à gaz et à pêtrole et le troisième aux roues hydrauliques et aux turbines. On y trouve le nombre d'unités d'une certaine puissance et leur capacité combinée en chevaux-vapeur.

Le tableau 10, qui est une nomenclature des groupes d'unités actionnées par la vapeur, selon la capacité en chevaux-vapeur de ces unités, délimite clairement le champ de la machine à vapeur et fait ressortir l'adaptabilité de la turbine à vapeur à l'industrie électrique. La plus forte machine à vapeur alternative en usage dans cette industrie, a une force maximum de 2,250 chevaux-vapeur, tandis que 5 turbines à vapeur d'une force de 5,000 à 10,000 chevaux-vapeur sont constamment en usage et que cinq autres sont installées dans les usines auxiliaires. Il est remarquable que, sur le total des 218 machines à vapeur, 191 ou 87·6 pour cent sont au-dessous de 500 chevaux-vapeur et ont ensemble une force de 33,869 chevaux-vapeur, tandis que sur les 37 turbines à vapeur, 21 ou 56·8 pour cent ont une force individuelle de plus de 2,000 chevaux-vapeur et une capacité totale de 78,263 chevaux-vapeur. Les usines commer-

ciales possèdent au total 121 machines à vapeur d'une force combinée de 32,025 chevaux-vapeur et 20 turbines à vapeur d'une puissance totale de 51,715 chevaux-vapeur; en d'autres termes 38·2 pour cent de la capacité totale des engins à vapeur des usines commerciales est représentée par les machines à vapeur et 61·8 pour cent par les turbines à vapeur. Cette analyse se trouve exprimée sous une forme graphique dans le diagramme 4.

Les moteurs à explosion forment le sujet du tableau 11; on constate que le nombre de ces unités installées dans les usines commerciales et dans les usines municipales est à peu près le même, mais la puissance en chevaux-vapeur des usines municipales est de 8,486 chevaux-vapeur contre 4,800 chevaux-vapeur pour les usines commerciales, soit 63·9 pour cent du total; l'usage de ce genre d'engins par les usines électriques centrales n'est limité à aucune localité particulière, sauf le cas où la minime capacité de ces unités détermine cette limitation. La province de la Saskatchewan possède 63 moteurs à gaz et à pétrole, ou 47 pour cent du total pour la Puissance.

Force motrice hydraulique dans les usines centrales.—Le Canada est exceptionnellement riche en forces hydrauliques. Presque chaque grand centre industriel est actuellement desservi par l'énergie hydro-électrique et possède, à une distance de transmission aisément accessible, d'amples réserves de forces hydrauliques. De nouvelles entreprises hydro-électriques relient rapidement les quelques centres qui en sont encore privés et qui ont des chutes d'eau dans leur voisinage. Le remarquable degré de développement des usines hydro-électriques au Canada rend très instructive l'analyse de ce genre d'usines.

Le tableau 12, relate le matériel fournissant l'énergie primaire dans les usines hydro-électriques, du type commercial et du type municipal, établissant une comparaison à ce sujet entre ces deux genres d'établissements. Les unités y sont classifiées par séries, selon leur capacité. Par exemple, dans les usines commerciales aussi bien que dans les usines municipales, près de la moitié du matériel installé est représentée par les unités développant plus de 10,000 chevaux-vapeur, ou pour préciser 59·5 pour cent dans les usines commerciales et 55·9 pour cent dans les usines municipales.

La totalité de l'installation hydraulique, développant 1,682,191 chevaux-vapeur, est composée de 628 unités, d'une force moyenne de 2,713 chevaux-vapeur. 258 de ces unités sont d'une force égale ou inférieure à 500 chevaux-vapeur et ne fournissent que 43,258 chevaux-vapeur ou 2·6 pour cent de la totalité; 186 unités de 2,000 chevaux-vapeur et plus, contribuent au total pour 1,457,905 chevau-vapeur ou 86·6 pour cent de la totalité; 119 unités de 5,000 chevaux-vapeur et plus, donnent 1,267,980 chevaux-vapeur ou 75·4 pour cent; 74 unités de 10,000 chevaux-vapeur et plus produisent 989,900 chevaux-vapeur ou 58·8 pour cent; enfin 18 unités de 15,000 chevaux-vapeur et plus, développent 318,500 chevaux-vapeur ou 18·9 pour cent. Les usines commerciales accaparent 466, ou 75·2 pour cent, des machines et 80 pour cent de la force motrice totale. Il n'est pas inutile d'indiquer ici que 2 nouvelles unités de 20,000 chevaux-vapeur chacune ont été installées dans l'une des usines municipales de la province d'Ontario au cours de l'année, mais ne sont pas comprises dans cette analyse, parce qu'elles n'ont commencé à fonctionner qu'en 1919. Le diagramme 5 présente sous la forme graphique les totaux du tableau 12.

Un résumé très élaboré des statistiques des usines hydro-électriques se trouve dans le tableau 13, qui donne une juste idée du rôle important joué par cette sorte d'usines. Ces statistiques concernent uniquement les usines électriques centrales, et laissent entièrement de côté tout ce qui se rapporte aux énormes intérêts industriels dépendant directement ou indirectement de la force motrice hydraulique à bon marché. Par conséquent ces chiffres représentent les fondements sur lesquels repose une proportion considérable de l'activité industrielle du Canada, ce qui donne un intérêt tout spécial à ce tableau. Les statistiques financières sont celles des usines hydro-électriques productrices d'électricité, mais ne comprennent pas les usines non génératrices, qui achètent le courant en bloc aux usines hydro-électriques.

Les usines centrales hydro-électriques possèdent des roues hydrauliques et turbines développant 1,682,191 chevaux-vapeur ou 91·4 pour cent de la totalité du matériel installé dans les usines principales et 85·5 pour cent de l'ensemble de l'énergie primaire fournie par la totalité du matériel, y compris celui des usines auxiliaires et de réserve.

Outre les 620 roues hydrauliques et turbines, il y a aussi, comme machinerie auxiliaire ou de réserve, 50 machines à vapeur alternatives produisant 20,595 chevaux-vapeur, 20 turbines à vapeur donnant un total de 96,000 chevaux-vapeur et 5 moteurs à gaz ou à pétrole fournissant 603 chevaux-vapeur. La capacité totale de la machinerie fournissant l'énergie primaire installée dans les centrales hydro-électriques, y compris les machines des usines de réserve, est donc de 1,799,389 chevaux-vapeur. Le capital absorbé par ces usines atteint $326,678,516 et les recettes brutes provenant de la vente du courant se sont élevées à $33,908,420, dont $5,765,526 produits de l'électricité vendue directement pour l'éclairage, et $28,142,884 prix de vente de l'électricité servant à tous autres usages.

Entre toutes les provinces, Ontario fournit le capital le plus important aux usines hydro-électriques productrices d'électricité, sa part représentant $139,648,862 ou 42·8 pour cent de la totalité pour ce genre d'usines dans la Puissance; Québec occupe le second rang avec $130,682,620 ou 40·0 pour cent de la totalité, ces deux provinces représentant ensemble 82·8 pour cent du total. Les deux mêmes provinces ont encaissé ensemble 86·6 pour cent de la totalité des recettes de ces sortes d'usines. Les usines hydro-électriques possèdent 584 dynamos, d'une capacité totale de 1,301,224 kilo-volt-ampères, plus 53 autres développant 91,636 kilo-volt-ampères, dans les usines auxiliaires. La moyenne de capacité des dynamos par cheval-vapeur hydraulique est 0·77 kilo-volt-ampère. Le même tableau contient des détails étendus sur la répartition du matériel fournissant l'énergie primaire, par séries et par provinces. Les 56 turbines hydrauliques entre 10,000 et 15,000 chevaux-vapeur développant ensemble 671,400 chevaux-vapeur et les 18 turbines de 15,000 chevaux-vapeur et plus, avec une capacité totale de 318,500 chevaux-vapeur, forment partie des installations les plus importantes des grandes compagnies de distribution de la Colombie Britannique, d'Ontario et de Québec, ou bien des grandes usines auxiliaires de ces provinces.

Ce que nous venons de dire des usines centrales hydro-électriques serait incomplet si l'on ne parlait pas de l'ultime capacité de ces usines et des installations supplémentaires actuellement en cours ou projetées dans un avenir rapproché. Cette indication est particulièrement nécessaire dans ce rapport, en raison du fait que dans un grand nombre de cas, spécialement lorsqu'il s'agit des chutes d'eau les plus volumineuses, les barrages, les ouvrages de captation et les usines du pied des chutes sont construites de manière à permettre la facile installation de machines supplémentaires, avec un minimum de dépenses. En d'autres termes, le capital dépensé pour la construction des usines électriques existantes, comprend le coût des travaux permanents destinés à recevoir des installations futures. On trouvera dans le tableau 14, une nomenclature, par provinces, des roues hydrauliques et turbines actuellement installées, leur force, l'ultime capacité des usines existantes et l'importance des nouvelles installations projetées. Il est à remarquer que les usines existantes ont été construites en vue d'une capacité ultime supérieure de 432,852 chevaux-vapeur à celle qu'elles développent actuellement et que des installations se totalisant par 135,755 chevaux-vapeur sont projetées et doivent être réalisées à bref délai. Les travaux d'installation d'un certain nombre de ces nouvelles unités sont déjà bien avancés.

Dynamos.

Dans les statistiques des dynamos des usines électriques centrales, on a établi une distinction entre celles à courant direct et celles à courant alternatif; quant au surplus elles sont analysées à peu près de la même manière que le matériel fournissant

l'énergie primaire. Les dynamos installées dans les usines auxiliaires ne figurent pas dans les statistiques, à moins d'indication contraire. La capacité totale des dynamos est de 1,433,722 kilo-volt-ampères, ce qui donne une moyenne de 0·78 kilo-volt-ampère par cheval-vapeur d'énergie primaire.

On verra dans le tableau 15, que les 990 dynamos se décomposent en 141 machines à courant direct ayant une capacité totale de 12,494 kilo-volt-ampères et 849 machines à courant alternatif ayant une capacité totale de 1,421,228 kilo-volt-ampères, représentant 99·2 pour cent de la capacité totale des deux types. Les pourcentages indiquent que 78·8 pour cent de la capacité des machines à courant direct et 78·0 pour cent de la capacité des machines à courant alternatif se trouvent dans les usines commerciales, tandis que 21·2 pour cent et 22·0 pour cent respectivement représentent l'installation dans les usines municipales.

Le tableau 16 donne le nombre des usines contenant différents types de dynamos. Sur les 515 usines productrices recensées, 81 ne contiennent que des dynamos à courant direct, 421 ne possèdent que des dynamos à courant alternatif et 13 combinnent ces deux types; 78·6 pour cent du nombre des usines commerciales et 87·4 pour cent du nombre des usines municipales ne possèdent que des dynamos à courant alternatif.

La capacité moyenne des machines génératrices par usine et par machine nous est révélée par le tableau 17, pour ces deux genres de dynamos; on y voit que la capacité moyenne par usine est de 2,784 kilo-volt-ampères, les 332 usines commerciales ayant une capacité moyenne de 3,369 kilo-volt-ampères et les 183 usines municipales de 1,723 kilo-volt-ampères. La moyenne de capacité par machine, pour toutes usines, est 1,448 kilo-volt-ampères, soit 1,697 kilo-volt-ampères dans les usines commerciales et 953 kilo-volt-ampères dans les usines municipales.

Ce qui frappe immédiatement à la lecture de ces chiffres, c'est la moyenne extraordinairement basse de la capacité des machines à courant direct; ceci est dû à l'usage très restreint que l'on fait dans les usines électriques centrales des dynamos à courant direct.

Le tableau 18 est consacré à l'énumération du nombre et de la capacité en kilo-volt-ampères des dynamos, tant dans les usines commerciales que dans les usines municipales, par provinces. L'analyse contenue dans ce tableau ressemble à celle relative aux machines fournissant l'énergie primaire, qui fait l'objet du tableau 7. Les pourcentages indiqués dans les colonnes 6 et 7, dans chacun de ces tableaux, sont naturellement tout à fait similaires dans chaque province. L'étude de la moyenne de capacité des unités installées dans les différentes provinces et dans les différents genres d'usines, n'est pas dénuée d'intérêt. En effet, les tableaux 17 et 18 nous apprennent que dans la province de l'Alberta, par exemple, il existe 84 machines productrices d'énergie primaire ayant une puissance totale de 75,915 chevaux-vapeur, soit une moyenne de 903·7 chevaux-vapeur par machine, tandis qu'il y a 78 dynamos d'une capacité totale de 58,193 kilo-volt-ampères, donnant une moyenne de 746 kilo-volt-ampères par machine. D'autre part, en Colombie Britannique, la moyenne de capacité des machines produisant l'énergie primaire, installées dans les usines électriques centrales, est de 2,525 chevaux-vapeur et celle des dynamos de 1,519 kilo-volt-ampères. La capacité totale des dynamos installées, par provinces, est présentée sous une forme graphique dans le diagramme 6.

Il ne suffirait pas de considérer la capacité moyenne des dynamos installées, si l'on n'y ajoute pas les informations de nature à éclairer la situation, par exemple la puissance des usines et la force des machines, que l'on peut voir dans les tableaux 19 et 20. Il résulte du tableau 19 que, sur le total de 515 usines productrices recensées, 284 possèdent des dynamos dont la capacité est inférieure à 200 kilo-volt-ampères, tandis que 37 de ces usines développent 5,000 kilo-volt-ampères ou plus et, toutes ensemble, 1,190,964 kilo-volt-ampères ou légèrement plus de 83 pour cent de la capacité totale des dynamos dans toutes usines. De plus, le tableau 20 nous enseigne qu'il

existe 450 dynamos dont la force est inférieure à 200 kilo-volt-ampères et 93 autres dont la puissance dépasse 5,000 kilo-volt-ampères. La capacité combinée des machines de ce dernier groupe est 917,522 kilo-volt-ampères ou 64 pour cent pour la capacité totale de toutes dynamos; il est donc facile de voir que les grandes usines productrices exploitées pour l'alimentation de vastes réseaux de distribution augmentent la capacité moyenne des dynamos par usines et par machine dans une telle mesure qu'il est indispensable de recourir à une analyse détaillée pour se former une opinion lucide de l'ensemble de la situation. La dissémination dans les différentes provinces des usines et des machines, classées selon leur capacité, telle qu'elle se présente dans ces tableaux, offre une très intéressante étude.

En vue de faciliter les comparaisons, un résumé du matériel producteur d'énergie primaire et des dynamos a été soumis dans le tableau 21, mettant ainsi en regard la capacité des dynamos installées et la force en chevaux-vapeur du matériel fournissant l'énergie primaire. Pour l'ensemble de la puissance, les statistiques indiquent une moyenne de 77·8 kilo-volt-ampères de capacité des dynamos pour chaque 100 chevaux-vapeur de la machinerie fournissant l'énergie primaire. Pour les provinces d'Ontario et de Québec cette moyenne est 80·5 kilo-volt-ampères pour 100 chevaux-vapeur et pour les autres provinces elle varie depuis 60·4 kilo-volt-ampères jusqu'à 97·6 kilo-volt-ampères.

Statistiques financières.

On a déjà indiqué dans l'introduction de ce rapport et dans les commentaires des différentes tables consacrées au matériel, les difficultés que présente l'analyse de l'industrie de l'électricité. Cependant il n'est pas hors de propos de jeter un coup d'œil sur quelques facteurs importants au point de vue de l'interprétation des statistiques financières découlant de la compilation des formules du recensement.

Ces rapports sont limités aux usines électriques centrales et, toutes les fois que quelque autre industrie est exploitée de pair avec celle-ci par le même industriel ou compagnie, il a été pris grand soin de laisser de côté ce qui ne se rattache pas à l'industrie électrique proprement dite.

Un assez grand nombre d'industries diverses sont exploitées concurremment avec les usines centrales électriques; il y en a deux, toutefois, qu'il importe de considérer spécialement, savoir: la fourniture d'électricité aux tramways électriques, et aux pompes d'aqueducs. Ce sont les usines commerciales qui se livrent principalement à l'exploitation des réseaux de tramways et ce sont surtout les usines municipales qui fournissent de l'électricité aux pompes des aqueducs. Dans l'un et l'autre cas, les opérations de l'usine électrique centrale sont au moins égales en importance à celles de l'industrie apparentée et, par conséquent, diffèrent grandement des autres usines où la vente de l'énergie électrique ne joue qu'un rôle accessoire. Le plus souvent les tramways et les aqueducs sont dirigés par des organisations séparées, filiales des organisations contrôlantes, ce qui permet d'obtenir aisément des chiffres distincts pour les statistiques. Dans d'autres cas le tramway est exploité comme entreprise distincte, et, à ce titre, est débité par l'usine électrique du prix du courant qui lui est fourni. Dans l'un et l'autre de ces deux cas la totalité de la machinerie de l'usine est employée à la production de l'électricité. Il existe cependant certains cas où les deux opérations ne sont pas séparées et où l'usine génératrice contient des unités spéciales travaillant uniquement pour le bénéfice des tramways. Dans ce cas les statistiques concernant l'usine électrique centrale ont été obtenues au moyen d'estimations faites avec soin. Le problème résultant de la combinaison d'opérations d'une usine électrique centrale et d'une station de pompes d'aqueduc n'est pas aussi compliqué que celui présenté par d'autres usines composites, puisqu'il est limité aux municipalités, qui possèdent des services séparés pour chacune de ces activités, le service de l'électricité étant crédité du prix du courant fourni au service des eaux.

Ainsi des états financiers sont possible pour le service de l'éclairage et de la force motrice.

Lorsqu'aucune recette ne dérive du courant fourni pour les fins ci-dessus mentionnées et pour d'autres besoins municipaux tels que l'éclairage des rues, des parcs et des édifices publics, les recettes effectivement encaissées par les usines qui assurent ces services ont été augmentées d'une somme égale à la valeur du courant fourni, calculée aux taux normaux.

Capitaux absorbés par les usines électriques centrales. — Le tableau 22 nous montre que les capitaux placés dans cette industrie s'élèvent à $401,942,402, dont $288,151,605 ou 71·7 pour 100 pour les usines commerciales et $113,790,797 ou 28·3 pour 100 pour les usines municipales. Ces capitaux représentent, à concurrence de $356,547,217, la valeur des terrains, bâtiments, travaux hydrauliques, usines, sous-stations et postes de distribution, agencement et matériel de transmission et de distribution, et à concurrence de $45,395,185, les fonds de roulement et les approvisionnements en stock. Ces chiffres embrassent toutes les usines, productrices d'électricité ou non.

Dans le tableau 23, on voit quelle partie de ces capitaux appartient à chacune des provinces, ainsi que la relation entre la mise de fonds et le cheval-vapeur d'énergie primaire d'une part et le kilo-volt-ampère d'autre part. Ces moyennes sont computées sur la capacité des machines installées dans les usines principales seules d'abord, et ensuite pour les installations combinées des usines principales et des usines auxiliaires. Ainsi qu'on l'a déjà dit, il est absolument impossible de différencier dans les statistiques financières les usines auxiliaires des usines principales, si bien que la base d'analyse la plus logique se trouve nécessairement être le capital placé par unité de force motrice, y compris celle produite par les usines auxiliaires. D'autre part la majorité des usines auxiliaires ne représentent pas un matériel fonctionnant régulièrement mais simplement une capacité équivalente, tenue en réserve en cas de besoin.

Les chiffres qui ressortent de cette analyse sont intéressants en ce qu'ils prouvent le développement de l'industrie dans les différentes provinces, à la lueur des capitaux qui y sont engagés. Pour l'ensemble de la Puissance, la moyenne des capitaux par cheval-vapeur d'énergie primaire, à l'exclusion de la machinerie des usines auxiliaires est $218; elle est de $205 par rapport à l'installation combinée des usines principales et des usines auxiliaires. Dans les provinces la moyenne varie de $162 en Colombie Britannique à $343 dans le territoire du Yukon. On constate que les chiffres des provinces d'Ontario et de Québec concordent presque absolument.

Capitaux absorbés par les usines hydro-électriques et leurs réseaux. — Le tableau 24 est consacré à l'énumération des capitaux placés dans les usines hydro-électriques et les usines non-productrices, qui achètent leur énergie aux usines hydro-électriques. De cette manière les capitaux placés dans de vastes réseaux de distribution exploités par de nombreuses organisations individuelles, mais alimentés par le courant acheté en bloc à quelques usines hydro-électriques, se trouvent compris dans les totaux de ce tableau. Ces totaux ne doivent pas être confondus avec ceux du tableau 13, lequel représente uniquement le capital assurant le fonctionnement des usines tirant de l'eau la force motrice qu'elles produisent. Les capitaux consacrés à ces usines dans toute la Puissance, forment un total de $364,479,916 ou 90·7 pour cent de la totalité des capitaux absorbés par toutes les usines électriques centrales du Canada. La moyenne de capital par cheval-vapeur hydraulique est $217; si l'on y ajoute les usines à combustible servant de réserve aux usines hydrauliques, alors cette somme descend à $203. Dans les provinces, les capitaux placés sont en raison directe du développement de l'industrie. La Colombie Britannique, qui occupe le troisième rang au point de vue de l'importance des forces hydrauliques mises au service de la production d'électricité, a le moindre capital par cheval-vapeur hydraulique. Le diagramme 7 donne une démonstration graphique du capital engagé, par provinces, dans les usines hydro-électri-

ques et les usines consommant du combustible, puis dans ces deux sortes d'usines réunies.

Recettes provenant de la vente d'électricité. — Avant d'entrer dans les détails des recettes provenant de la vente d'électricité, encaissées par les usines centrales électriques, il convient de faire remarquer que le chiffre total comprend les sommes provenant de la revente de l'énergie achetée en bloc par une centrale à une autre centrale et que, dans quelques cas, le même courant procure une recette à plusieurs autres entreprises distinctes avant d'atteindre finalement le consommateur. Les recettes provenant de la seconde et de la troisième vente d'électricité sont, dans une large mesure, mises à part dans les tableaux 26 et 27, dans les colonnes consacrées aux usines dépourvues de dynamos; cependant cette séparation n'est pas absolue puisqu'un certain nombre d'usines productrices achètent l'énergie en bloc à d'autres usines, pour suppléménter leur propre production.

On verra, dans le tableau 25, que toutes les usines du Canada ont encaissé un total de $53,549,133, dont 62 pour cent pour les usines commerciales et 38 pour cent pour les usines municipales. Le questionnaire du recensement invite les industriels à diviser leurs recettes en deux classes, celles résultant de l'électricité destinée à l'éclairage et celles produites par l'électricité destinée à tous autres usages. Sous ce dernier en-tête figurent les recettes des ventes en bloc faites à d'autres compagnies de distribution, lesquelles, à leur tour, ont indiqué leurs propres recettes en établissant la même division. L'électricité consommée pour l'éclairage a produit $16,952,512 et pour tous autres usages $36,596,621, soit 31·7 pour cent et 68·3 pour cent respectivement du prix total de toute l'électricité vendue.

Le tableau 26 opère la répartition des recettes par usines, groupées selon la capacité de leurs dynamos. Nous venons de dire que la totalité des recettes a atteint $53,549,133. Les usines dont les dynamos ont une puissance inférieure à 200 kilovolt-ampères ont reçu $1,278,799, dont $1,115,923 pour l'éclairage et $162,877 pour tous autres usages. D'autre part le tableau indique que les recettes encaissées par les usines dont les dynamos ont une puissance de 5,000 kilo-volt-ampères et plus se sont élevées à $30,978,872, dont $5,351,398 pour l'éclairage et $25,627,474 pour tous autres usages. Ces chiffres, appliqués aux usines productrices d'électricité groupées à chacune des extrémités du tableau, nous montrent quelle est la clientèle pour chaque catégorie d'usines; les plus petites usines tirent 87·3 pour cent de leur recettes totales de l'énergie vendue pour l'éclairage tandis que, pour les plus grandes usines, 82·7 pour cent de leurs recettes brutes proviennent de leurs ventes d'électricité utilisée comme force motrice. Les usines génératrices d'importance moyenne présentent un changement graduel dans la principale source de leurs recettes. Les usines non-productrices qui ont absorbé 21·2 pour cent des recettes totales de toutes les usines du Canada vendent à peu près autant d'électricité pour l'éclairage que pour la force motrice. Toutefois en établissant cette comparaison, il faut se souvenir que dans les recettes de l'électricité pour tous usages figurent les ventes à d'autres usines centrales, et qu'une partie de cette énergie est revendue par ces dernières usines pour servir à l'éclairage.

Pour éclairer le côté économique de la question, le tableau 27 contient une comparaison entre les capitaux placés et les recettes brutes, par provinces. Dans ce tableau les chiffres sont donnés séparément, d'abord pour toutes les usines et ensuite pour les usines génératrices et les usines non-productrices. Les usines produisant leur propre énergie ont un capital souscrit de $364,653,246 ou 90 pour cent du total pour toutes usines et un revenu brut de $42,201,435 ou 78·8 pour cent du revenu total. D'autre part le capital représenté par les usines qui ne produisent aucune partie de l'électricité qu'elles distribuent est de $37,289,156 et leurs recettes brutes $11,347,698, de laquelle somme il convient de déduire le prix d'achat du courant. Les très nombreuses usines de distribution d'Ontario absorbent 71·0 pour cent du capital et 67·2 pour cent des recettes de la totalité des usines non-productrices du Canada.

Personnel, traitements, appointements et salaires.

En procédant au recensement, on a établi une distinction entre les employés recevant des traitements ou appointements et les ouvriers et journaliers. La première catégorie se subdivise en deux classes: administrateurs, directeurs et gérants; commis, sténographes et autres employés. Les ouvriers et journaliers figurent dans une seule masse. En ce qui concerne le personnel occupé dans l'industrie de l'électricité il n'a pas été jugé utile d'obtenir des détails sur le genre de travail accompli par lui mais tout simplement de faire un dénombrement des employés d'une part et des ouvriers de l'autre. On comprendra aisément la raison de ce mode d'opérer, lorsque l'on saura que dans de nombreuses petites usines productrices d'électricité, tout le travail est fait par une ou deux personnes, tandis que la simplicité de l'exploitation d'un grand nombre des usines de distribution ne nécessite les services que d'un unique employé. Il est également à remarquer que dans les usines composites et les usines municipales, les services de certains employés et ouvriers sont fréquemment utilisés pndant une certaine période à des travaux qui n'ont rien de commun avec l'usine électrique centrale. En ce qui concerne le personnel ne travaillant qu'une partie du temps aux usines, on n'a fait figurer dans les statistiques que la portion de leurs salaires proportionnelle à la durée de ce travail.

Le tableau 28 nous donne pour chacune des provinces le capital effectivement souscrit et utilisé dans l'exploitation des usines et des réseaux de transmission et de distribution, le nombre du personnel des bureaux, le montant de leurs traitements et appointements, le nombre des ouvriers et journaliers et le total de leurs salaires. Le nombre des ouvriers et journaliers ressortant de ce tableau est le nombre moyen des ouvriers occupés durant l'année, tandis que le nombre indiqué au tableau 32 est celui de la liste de paye au 15 décembre. Le capital représenté par les terrains, bâtiments, ouvrages hydrauliques, réseaux de distribution, machinerie et installation, pour toutes les usines, était $356,547,217, dont $157,712,233 ou 44·3 pour cent se rapportant aux usines d'Ontario, $118,015,571 ou 33·1 pour cent à celles de Québec et $37,441,624 ou 10·5 pour cent à celles de la Colombie Britannique, c'est-à-dire que le capital absorbé par l'industrie électrique de ces trois provinces se totalise par $313,169,428 ou 87·9 pour cent du total pour la Puissance.

On verra par le tableau 29 le nombre des ouvriers et journaliers occupés le 15 décembre 1918 ou au jour de paye le plus rapproché de cette date, ainsi que le total des salaires à eux payés. Le choix arbitraire de cette date est tempéré par la facilité donnée aux industriels de lui en substituer une autre et nous croyons que les chiffres indiqués représentent aussi exactement que possible le personnel employé pendant l'année. Les chiffres qui concernent les ouvriers et les journaliers donnent la moyenne de leur nombre pendant l'année et le montant total de leurs salaires.

L'industrie de l'électricité au Canada donne du travail à 9,696 personnes, dont les traitements, appointements et salaires s'élèvent à la somme de $10,354,242. Les usines commerciales emploient 5,690 personnes auxquelles elles payent $6,137,525, soit 58·7 pour cent du total du personnel et 59· pour cent du total des traitements, appointements et salaires pour toutes usines. Le tableau consacré au personnel donne les chiffres s'y rapportant, d'abord pour l'ensemble des usines et ensuite pour les usines commerciales et municipales séparément.

Des détails similaires relatifs au personnel, aux traitements, appointements et salaires sont donnés pour chacune des provinces dans le tableau 30. Les provinces de Québec et d'Ontario, qui tiennent la tête de la production électrique, ainsi qu'on a pu en juger par les statistiques déjà commentées, emploient ensemble 76 pour cent de la totalité du personnel de toutes les usines électriques centrales du Canada. A elle seule la province d'Ontario occupe 4,431 personnes ou 45·8 pour cent, celle de Québec 2,943 ou 30·3 pour cent; la Colombie Britannique 634 ou 6·5 pour cent les autres provinces

contribuant au total par des quotités variant de 4·5 pour cent à 3 pour cent. Le développement remarquable de la municipalisation de l'industrie électrique dans la province d'Ontario est démontré une fois de plus par ce tableau, qui nous montre que cette seule province occupe 68·5 pour cent de la totalité du personnel de toutes les usines municipales.

Le tableau 31 contient une analyse du nombre du personnel et de ses appointements et salaires, par cheval-vapeur d'énergie primaire et par kilo-volt-ampère des dynamos installées. C'est dans la Colombie Britannique que se trouve la proportion la plus minime du personnel, c'est-à-dire 2·9 personnes par mille chevaux-vapeur, avec une moyenne de $3.94 d'appointements et salaires par cheval-vapeur. Les chiffres combinés des provinces suivantes: Alberta, Colombie Britannique, Manitoba, Ontario et Québec, qui puisent la masse de leur énergie électrique dans les usines hydro-électriques nous indiquent que la moyenne du nombre des employés, par mille chevaux-vapeur, est 5·0 et la moyenne des appointements et salaires de $5.38 par cheval-vapeur. Les provinces du Nouveau-Brunswick, de la Nouvelle-Ecosse, de l'Ile du Prince-Edouard et de la Saskatchewan dans lesquelles les usines à combustible dominent ont une moyenne de 11·4 employés par mille chevaux-vapeur et une moyenne de $11.64 d'appointements et salaires par cheval-vapeur.

Le tableau 32 est consacré exclusivement aux ouvriers et journaliers ou autres personnes payées à l'heure, à la journée ou à la semaine, qui figurent sur la liste de paye le 15 décembre 1918. Les ouvriers et journaliers occupés seulement pendant une partie de leur temps, y figurent aussi, aussi bien que ceux qui travaillent tout le jour; c'est cette catégorie d'ouvriers qui abaisse la moyenne des salaires hebdomadaires.

On voit dans ce tableau le nombre de personnes occupées dans toute la Puissance et dans chaque province, le taux de leur salaire, leur sexe et leur âge. Ceux au-dessous de 16 ans ne constituent que 0·4 pour cent du total et la main-d'œuvre féminine 0·7 pour cent. Ceux recevant plus de $25 par semaine représentent 27·4 pour cent; ceux qui gagnent entre $20 et $25, 29·8 pour cent, et ceux dont le salaire se classe entre $15 et $20, 23·7 pour cent. Sur la totalité 80·9 pour cent ont gagné plus de $15 par semaine.

Le combustible fait l'objet du tableau 33; il nous fait connaître la consommation qui en est faite par les usines qui supplémentent leur force hydraulique par des machines à vapeur, à gaz ou à pétrole, soit pendant les moments de plus grande consommation d'énergie, soit pendant les périodes de sécheresse, ou qui emploient exclusivement des machines à vapeur, à gaz ou à pétrole.

Ce tableau ne devrait pas être considéré isolément, mais il faudrait le rapprocher du tableau 4. En laissant de côté les usines auxiliaires ou de réserve, lesquelles ne fonctionnent qu'irrégulièrement, l'Alberta possède la plus grande capacité en chevaux-vapeur fournie par les machines à vapeur, à gaz et à pétrole, mais eu égard au bon marché du gaz, du pétrole, du lignite et de la houille bitumineuse dans cette province, le coût du combustible ne dépasse pas $348,678 pour les 42,315 chevaux-vapeur installés. La Saskatchewan, qui tire toute sa force motrice du combustible, doit payer $529,760 pour 41,215 chevaux-vapeur installés, tandis que dans Ontario le combustible coûte $556,698 pour les 35,992 chevaux-vapeur installés dans les usines principales ou les 73,140 chevaux-vapeur des usines principales et des usines auxiliaires. Ces variations sont dues à la nature du combustible et au coût du transport, qui s'ajoute au prix payé dans les mines. Par exemple le coût moyen du lignite, ainsi que nous l'apprend ce tableau, était de $1.72 par tonne dans l'Alberta, $3.70 dans la Saskatchewan et $3.90 dans le Manitoba; d'autre part la houille bitumineuse menue coûte $3.00 dans l'Alberta, $4.00 en Colombie Britannique, $5.90 dans la Saskatchewan et $6.15 dans Ontario.

Un résumé général de l'ensemble de tous les principaux éléments du recensement a été dressé dans le tableau 34. On y voit les totaux pour la Puissance, pour les pro-

vinces, pour les usines commerciales et pour les usines municipales. Les chiffres relatifs aux usines commerciales et aux usines municipales sont de plus subdivisés en trois genres d'usines, selon la source de leur énergie, savoir: usines hydrauliques génératrices, usines à combustible génératrices, et usines non productrices.

Ce résumé présente, sous une forme brève, un aperçu complet des développements de l'industrie électrique au Canada.

APPENDICE.

On trouvera ci-dessous la traduction française du texte accompagnant les diagrammes intercalés dans le texte anglais, au commencement de cette brochure.

Diagramme 1, frontispice.
Usines électriques centrales.—Force motrice primaire, selon ses diverses sources, en 1918. (Sans y comprendre les 117,528 chevaux-vapeur installés dans les usines auxiliaires.)
Total—1,841,114 c.-v.
Eau—1,682,191 c.-v. ou 91.4 p.c.
Vapeur—145,637 c.-v. ou 7.9 p.c.
Gaz et pétrole—13,286 c.-v. ou 0.7 p.c.

Diagramme 2, page xiii.
Usines électriques centrales.—Division de la force motrice primaire entre les provinces en 1918. (A l'exclusion du matériel fournissant la force motrice primaire installé dans les usines auxiliaires.)
Centaines de milliers de ch.-vap.
Légende: Force motrice primaire.

Diagramme 3, page xiii.
Usines électriques centrales.—L'eau et le combustible, comme forces motrices, par provinces, en 1918. (A l'exclusion du matériel fournissant la force motrice primaire installé dans les usines auxiliaires.)
Centaines de milliers de ch.-vap.
Légende: Part de l'eau.
Part du combustible.

Diagramme 4, page xv.
Usines électriques centrales.—Machines à vapeur et turbines à vapeur, par groupes appariés, en 1918. (A l'exclusion de celles fournissant la force motrice primaire dans les usines auxiliaires.)
Dizaines de milliers de ch.-vap.
500 ch.-vap. ou moins.
Entre 500 et 2,000 ch.-vap.
Entre 2,000 et 5,000 ch.-vap.
Entre 5,000 et 10,000 ch.-vap.
10,000 ch.-vap. et plus.
Légende: Machines à vapeur.
Turbines à vapeur.

Diagramme 5, page xvi.
Usines électriques centrales.—Roues hydrauliques et turbines, par groupes appariés, en 1918.
Centaines de milliers de ch.-vap.
500 ch.-vap. ou moins.
Entre 500 et 2,000 ch.-vap.
Entre 2,000 et 5,000 ch.-vap.
Entre 5,000 et 10,000 ch.-vap.
Entre 10,000 et 15,000 ch.-vap.
15,000 ch.-vap. et plus.
Légende: Forces hydrauliques.

Diagramme 6, page xviii.
Usines électriques centrales.—Capacité des dynamos, en kilo-volt-ampères, par provinces, en 1918. (A l'exclusion de celles des usines auxiliaires.)
Centaines de milliers de chevaux-vapeur.
Légende: Capacité des dynamos.

Diagramme 7, page xxi.
Usines électriques centrales.—Capitaux absorbés, par provinces, en 1918.
Millions de dollars.
Légende: Dans les usines hydro-électriques.
Dans les usines à combustible.
Total.

CANADA
DOMINION BUREAU OF STATISTICS
INTERNAL TRADE DIVISION

Live Stock

AND

Animal Products Statistics

1909-1919.

(Prepared in collaboration with the Department of Agriculture, Canada.)

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920.

[No. 17c—1921.]

PREFACE.

The present report on the live stock and allied industries in Canada is the first of a proposed series, and is designed to present a general review of production and trade during the period of the war, with sufficient pre-war data to afford a basis for comparison. At the present moment, in view of the abnormal conditions created by the war, special need exists for the study and development of these important industries, and the object of the report is to assist such study. As above intimated, supplementary reports will be issued bringing the information to date from time to time, and thus placing the statistics of animal husbandry and contingent industries on the same basis as those which have been organized for grain production and the grain trade.

Materials for the report have been derived from various sources. With regard to the basic data, the Dominion Bureau of Statistics obtains through the decennial and quinquennial censuses a statement of live stock on farms and of the natural increase or decrease thereof and of animal products during the census year, together with a record of the sales and consumption of the same on farms. These records are maintained annually during intercensal periods by co-operative agreement between the Bureau and the Departments of Agriculture of the several Provincial Governments, under which agreement an estimate of the number of live stock on farms is made annually in the month of June, and a record of the condition of live stock maintained throughout the year. With regard to the manufactures based on live stock, an annual census is compiled by the Bureau of slaughtering and meat-packing establishments, dairy factories, tanneries, and other similar concerns. From the trade aspect, the interprovincial movement of live stock, meats, etc., is broadly recorded from month to month in the Bureau, where also the statistics relating to the imports and exports of live stock and animal products are prepared for publication monthly. A monthly report from each cold storage concern in Canada is also filed in the Bureau, showing stocks of meats, fish, poultry and dairy products on hand. The Bureau also maintains comprehensive monthly or weekly records of the prices obtained by producers and the wholesale and retail trade in live stock, meats, cheese, butter, eggs and other animal products.

The above records are supplemented in the present report by data obtained from the Health of Animals Branch, Department of Agriculture, Canada, showing slaughterings in inspected establishments under the Meat Inspection Act. The branch also supplies the Bureau with the bills of lading filed by their inspectors, which throw additional light on the shipments of meats and other products from inspected establishments. Valuable data relating to the marketing of live stock are also obtained from the Live Stock Branch of the Department of Agriculture, Canada, which maintains through representatives at the various stock yards a complete weekly record of receipts, shipments and prices, with statistics showing the origin of receipts. Both of these branches have co-operated in the preparation of the present report.

Other materials in the report have been derived from the records of the Canada Food Board, the statistics for which were compiled in the Bureau, and from those of the Acting Cost of Living Commissioner of the Department of Labour, whose duties have passed to the Board of Commerce. The data regarding the trade of foreign countries have been in the main derived from the official reports of those countries.

The work has been carried out in the Internal Trade Division of the Dominion Bureau of Statistics under the direction of R. J. McFall, Ph.D., Chief of the Division, who during 1918 also acted as Statistician for the Food Board and as Acting Cost of Living Commissioner.

R. H. COATS,
Dominion Statistician.

Dominion Bureau of Statistics,
April 27, 1920.

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LIVE STOCK AND ANIMAL PRODUCTS STATISTICS 1909-1919.

INTRODUCTION.

It is impossible to condense all the statistical material herein contained to a summary. Much more is it impossible to present a description of all the material. It is advisable, however, to draw brief attention to a few of the more interesting features of each section, with notes as to the source of information in each case, leaving it to students of this vitally important industry to make their own deductions.

Historical Surveys.

Tables I and II present an historical survey of the various classes of live stock by provinces, showing the numbers and total value of each class in each province and the whole Dominion, while Table III presents the average unit value of the same. These tables are a valuable historical record of the actual numerical situation during any one year in any one section of the country and present valuable comparisons between the various provinces. Table IV which presents the index numbers for the numbers of live stock during these years and shows the index numbers for the changing production of cereals and other field crops on the same basis tells a still more striking story. These index numbers are based upon the average of the first half decade period in the survey and show in a striking manner not only the annual changes in the various phases of agriculture but the relative change between phases as well. A study of these tables for the provinces is perhaps the most interesting.

Stockyard Receipts.

Tables V, VI and VII are compiled from the records of the Live Stock Branch, Department of Agriculture. Table Va shows the weekly movement into the live-stock yards. These figures are particularly valuable to all interested in the marketing of live stock when compared with the monthly prices for the animals as shown in Table XVIII. This material is put in readily comprehensible shape in the charts 28 and 29. Table Vb summarizes the receipts at these various markets and shows what becomes of the animals after they arrive on the market, tracing them to the packers, the smaller butchers, the country for further feeding, and as exports to the United States. Unfortunately for the completeness of the survey, large numbers of hogs are marketed or sold other than through the live-stock yards. This is not noticeably true in the case of other animals, and, even in the case of hogs, the complete public marketings, excepting local killings, can be arrived at by referring to Table VIII, which shows the complete number of animals slaughtered in all inspected establishments in Canada.

Live Stock Origins.

Table VI is derived from the records of the Live Stock Branch and was prepared in that office. It will be noticed that no record is shown for hogs. This is due to the fact mentioned above that only a portion of the hogs marketed go through the yards, and, since the data are gathered at the yards, a very misleading idea would be given were only this portion of the marketings of hogs shown by geographical origin. Many other hogs than those on the records of the yards originate in these districts and are sold direct to local and outside buyers. For those wishing the data on the origin of this limited portion of the hogs the records of the branch are open. The data on the other animals are reasonably complete.

Interprovincial Shipments of Live Stock.

The records showing the interprovincial and markets shipments of live stock are new and data are only available for the year 1919. Shipments shown are only those through the principal live-stock yards. This information is given in Table VII.

Slaughterings.

Table VIII has been prepared in the office of the Veterinary Director General and is based upon the reports of their inspectors. That this covers a large proportion of the total slaughterings may be gathered from the fact that no meat may be shipped from province to province excepting from inspected establishments and it is a patent fact that a very large portion of the meat to-day is slaughtered by concerns which conduct an interprovincial business. The total killings in these establishments are shown, and the number of animals "condemned" as unfit for food, the remainder, or difference between these, being marked "Canada approved" by the inspectors. These slaughterings are shown monthly to give the readers the complete facts as to the seasonal character of the slaughterings.

Production of Animal Products.

Tables IX and X show the annual production of meats and dairy products as compiled in the Census of Industry for those years available. The quantity in pounds and the value of the animals and other products going into the packing houses are also shown.

Stocks in Storage.

The statistics of foods in storage were collected by the Cost of Living Branch of the Labour Department until September, 1919, when the work passed to this Bureau. The classification of these commodities was incomplete in the early months, all meats in process of cure being included with meats in cold storage. It is not usual to include such stocks in process of cure in visible supply statistics, but the information is valuable when the separation and description is made. Statistics regarding storage and other stocks are peculiarly subject to misinterpretation when presented with too little auxiliary information. The proper study of this material is in the light of comparisons between one period and another and together with the data on seasonal production and consumption. A figure of 25,000,000 pounds of butter in storage in November appears large to a population paying a high price for that commodity, but wears a different aspect when it is realized that the major portion is produced in the early summer and is in equal demand throughout the year. A brief study of

the charts of the monthly holdings of these commodities is sufficient to show that the main function of storage is to act as a reservoir to steady seasonal marketings. The holdings of other commodities are not so easily explained, but a careful study of all available data as to supply and demand must be made. The presentation of this material covering a period of time, and especially the charts exhibited, should help towards a better understanding of this vexed problem.

Interprovincial Shipments of Meat.

The data on interprovincial shipments of meats are new. This material is based upon a compilation made from the bills of lading of all such shipments made in Canada. The law requires that these bills of lading must be supplied to the Veterinary Director General for all meats shipped out of inspected establishments; and, since all concerns doing interprovincial business must have their establishments inspected, theoretically these data must be complete on all such shipments. The bills of lading, however, are sometimes difficult to decipher, and various kinds of meats and edible and non-edible offals will be entered as a lump shipment. Complete comparability with statistics gathered by other methods is not therefore to be expected, though it may be pointed out that the only figures for which comparable data gathered on a different basis is available, viz., the customs returns, show only a small percentage of difference. The classification is not quite on the same basis and the "hold-over" or "suspense account" in the gathering of the two reports is different. Taking a two-year period the following comparison is shown:—

—	Beef and Veal.	Pork Products.	Mutton and Lamb.	Total.
1917-19 customs figures of exports	213,678,398	380,371,228	2,788,825	624,401,792
1917-19 bills of lading of exports	222,281,103	390,004,442	2,048,015	632,142,594

The percentage of error is small, particularly in the case of the total where different methods of classification make the least impression.

These tables show not only all movements from province to province, but show as well the distribution from each slaughtering centre, as all inspected establishments report all shipments to their own province. The export figures are also shown by provinces and chief cities. The only opportunity for comparison here with the customs figures is in the case of the totals for the Dominion.

Consumption Data.

The next section presents material gathered by the Licensing Division of the Canada Food Board, to which each wholesaler was required to report all stocks on hand (including a separate statement for goods in transit), and his purchases and his sales, the latter subdivided to show whether or not the sale was in the wholesaler's own city and whether it was to a wholesaler or a retailer. Sales to retailers cover goods destined directly for consumption, but goods sold to wholesalers are being turned over within the trade. The latter are transfers; the former are practically consumption figures and show what the Dominion and each part thereof was actually using, this, of course, referring to real commercial sales and not to goods consumed in the rural locality of origin. This work was started in May, 1918, and it took some time to secure reports of statistical value. The reports for November and December, 1918, immediately preceding the dropping of the work were regarded as sufficiently accurate to furnish a most valuable estimate of commercial consumption by which to interpret the storage figures presented elsewhere.

International Situation.

The international market situation is a feature of special importance to Canada to-day. For this reason the export figures for Canada are reproduced in summary form and also the chief facts in regard to the present live-stock situation in other countries as compared with normal times—their normal consumption of meat and their imports and exports. More detailed studies are shown in the charts for Great Britain and the United States, to which we must look for our chief markets. Great Britain's annual importation is shown for all important animal products, with the unweighted average price thereof: the greater or less part which Canadian export trade plays in relation thereto is shown in parallel columns in Table XVII and in Charts 15 to 21 inclusive. Attention must be called to the striking decline in the net export of most of our animal products in the half decade before the war. This was a period of railroad building and expansion in the West and the decline in animal products was offset by a gain in the export of cereals. The surplus which the United States has offered the world and her ruling prices are also shown in a series of charts. A study of these materials shows at once the extent of the American market for animal products, and the fact that, except for the increase during the war, the United States is rapidly approaching the time when her surplus will turn to a deficit necessitating purchases from outside. The trend of United States prices for such commodities, especially as compared with prices in general, is also of marked interest.

Prices.

The important factor of price is fully presented. Reference has already been made to certain selected parts of this material, but comprehensive tables have been included showing the prices of animals and animal products in all chief centres for a series of years.

TABLE I.—Numbers of Farm Live Stock in Canada by Provinces and Years.

MILCH COWS.

—	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Canada	2,849,305	2,853,951	2,594,179	2,604,488	2,740,434	2,673,286	2,666,846	2,833,433	3,202,283	3,543,600
Prince Edward Island	53,915	55,365	52,109	49,415	48,565	47,317	47,043	46,032	46,032	41,420
Nova Scotia	147,663	148,948	129,302	130,104	130,408	128,237	128,814	130,141	131,442	157,829
New Brunswick	122,577	122,136	108,532	110,507	106,904	102,713	101,665	100,221	100,221	120,123
Quebec	856,579	856,151	753,134	755,770	761,816	733,476	720,420	639,805	911,023	1,163,865
Ontario	1,260,572	1,243,980	1,032,979	1,033,392	1,141,071	1,085,843	1,077,808	1,082,119	1,082,119	1,102,039
Manitoba	167,442	164,746	155,337	148,471	152,792	156,306	157,494	196,288	202,177	225,659
Saskatchewan	124,186	138,455	181,146	184,896	194,843	204,624	211,684	322,185	354,403	352,989
Alberta	116,371	124,470	147,687	157,922	168,376	179,068	183,974	277,324	325,861	328,702
British Columbia	.....	.....	33,953	34,011	35,599	35,702	37,944	39,318	49,005	50,965

OTHER CATTLE.

Canada	4,384,779	4,250,963	3,939,257	3,827,373	3,915,687	3,363,531	3,390,155	3,760,718	4,718,057	6,507,267
Prince Edward Island	58,013	57,648	68,287	64,688	64,261	61,048	59,503	57,260	54,970	69,092
Nova Scotia	182,507	180,189	158,122	156,051	153,726	148,269	144,458	140,673	135,016	249,422
New Brunswick	113,850	110,389	113,659	113,136	107,864	99,256	96,437	92,223	89,456	166,624
Quebec	622,888	600,277	697,860	695,906	693,540	625,958	612,500	535,693	958,010	1,245,819
Ontario	1,771,433	1,629,364	1,471,694	1,380,890	1,460,015	970,445	935,606	901,924	865,847	1,770,683
Manitoba	333,752	314,915	279,776	267,130	256,926	251,996	246,663	357,870	357,870	521,240
Saskatchewan	391,789	431,164	452,466	461,244	468,255	474,436	513,609	659,208	856,687	926,342
Alberta	910,547	926,937	592,163	587,307	610,917	633,032	660,000	882,766	1,209,433	1,362,880
British Columbia	.....	.....	105,230	101,021	100,183	99,091	100,439	103,101	191,338	195,165

SHEEP.

Canada	2,705,390	2,598,470	2,175,302	2,082,381	2,128,531	2,058,045	2,038,662	2,022,941	2,369,358	3,052,748
Prince Edward Island	100,244	110,599	91,232	87,793	85,960	85,351	86,640	88,797	90,573	73,046
Nova Scotia	361,444	358,263	220,907	216,135	217,734	211,921	205,542	200,979	200,979	259,847
New Brunswick	215,289	203,620	158,216	148,723	135,115	121,739	111,026	105,997	103,877	140,015
Quebec	570,342	549,068	637,062	620,881	602,751	571,287	554,491	497,711	849,148	959,070
Ontario	1,118,945	1,032,227	743,483	677,462	705,848	640,416	611,789	589,581	595,477	972,341
Manitoba	29,074	30,266	37,322	40,800	42,840	45,303	50,880	76,750	80,588	130,782
Saskatchewan	129,630	135,360	114,216	114,810	115,568	126,027	133,311	124,237	127,892	134,177
Alberta	171,422	179,067	133,592	135,075	178,015	211,001	238,579	292,620	276,966	332,179
British Columbia	.....	.....	39,272	40,702	45,000	45,000	46,404	46,269	43,858	45,291

SWINE.

Canada	2,912,509	2,753,964	3,610,428	3,477,310	3,448,326	3,434,261	3,111,900	3,474,840	3,619,382	4,289,682
Prince Edward Island	47,853	48,623	56,377	50,463	43,762	41,718	40,792	38,300	35,236	40,814
Nova Scotia	70,508	69,958	63,322	61,194	56,580	53,892	53,402	51,928	49,850	68,238
New Brunswick	94,140	91,250	87,391	85,905	77,014	73,325	72,533	70,683	69,269	79,814
Quebec	670,042	651,415	793,348	747,254	661,768	634,569	632,729	531,303	712,087	997,255
Ontario	1,586,565	1,481,058	1,864,165	1,693,594	1,652,440	1,553,624	1,469,573	1,404,618	1,236,064	1,656,386
Manitoba	172,374	142,312	188,416	183,370	184,745	186,276	163,308	205,898	175,013	284,596
Saskatchewan	131,757	125,788	286,295	344,298	386,784	454,703	411,324	530,727	573,938	521,240
Alberta	139,270	143,560	237,510	278,747	350,692	397,123	229,696	603,554	730,237	601,534
British Columbia	.....	.....	33,604	32,485	34,541	39,031	38,543	37,829	37,688	39,805

TABLE II.—Farm Values of Live Stock by Provinces and Years.

MILCH COWS.

	1909	1910	1911	1912*	1913	1914	1915	1916	1917	1918
	$	$	$	$	$	$	$	$	$	$
Canada	103,601,000	121,613,000	109,575,526		115,369,294	153,632,637	164,223,592	198,896,000	274,081,000	307,244,000
Prince Edward Island			1,543,309		1,422,955	1,849,622	1,955,107	2,394,000	2,923,000	2,922,000
Nova Scotia			4,199,937		4,236,296	5,126,915	5,733,511	6,897,000	8,314,000	10,337,000
New Brunswick			3,292,165		3,399,547	4,108,520	4,062,533	4,861,000	6,314,000	7,810,000
Quebec			29,377,810		28,575,718	34,546,720	36,554,111	39,668,000	74,248,000	91,945,000
Ontario			48,708,555		53,801,498	69,707,988	74,961,546	82,241,000	100,096,000	105,515,000
Manitoba			6,246,903		6,149,878	9,675,341	10,256,009	14,427,000	17,842,000	20,322,000
Saskatchewan			7,835,820		8,426,960	13,472,444	14,635,832	23,358,000	30,213,000	32,122,000
Alberta			6,368,546		7,260,373	11,886,534	12,627,975	21,354,000	29,083,000	30,569,000
British Columbia			2,002,491		2,096,069	3,168,553	3,436,968	3,696,000	5,048,000	5,402,000

OTHER CATTLE.

Canada	126,326,000	131,781,000	86,278,490		86,522,140	143,498,156	151,477,474	204,477,000	270,595,000	398,814,000
Prince Edward Island			728,059		677,954	1,555,503	1,516,136	1,975,000	2,075,000	3,008,000
Nova Scotia			3,036,444		2,954,614	4,289,422	4,615,433	5,275,000	6,077,000	11,046,000
New Brunswick			1,391,675		1,328,884	2,655,098	2,692,521	3,043,000	3,534,000	6,770,000
Quebec			8,725,031		8,655,379	24,787,937	24,659,250	27,052,000	43,830,000	56,062,000
Ontario			32,776,254		32,937,938	43,961,159	44,216,740	58,625,000	54,332,000	118,765,000
Manitoba			6,311,318		5,793,681	10,369,035	10,823,406	18,251,000	20,488,000	33,546,000
Saskatchewan			13,997,475		14,487,810	21,003,282	25,761,651	35,150,000	50,116,000	61,139,000
Alberta			16,302,340		16,824,654	28,980,205	32,214,000	49,435,000	77,706,000	95,402,000
British Columbia			3,009,894		2,861,226	5,895,915	4,977,757	5,671,000	12,437,000	13,076,000

SHEEP.

Canada	15,735,000	15,819,000	10,701,691		10,672,803	14,550,710	16,224,067	20,927,000	35,576,000	48,802,000
Prince Edward Island			368,036		342,640	516,374	603,881	709,000	1,245,000	1,081,000
Nova Scotia			795,273		857,872	990,029	1,085,262	1,906,000	1,809,000	2,626,000
New Brunswick			633,158		451,284	563,652	582,887	689,000	1,039,000	1,642,000
Quebec			2,710,285		2,567,719	3,770,494	4,147,593	5,226,000	12,737,000	13,427,000
Ontario			4,427,565		4,256,263	5,671,619	6,136,244	7,370,000	11,016,000	19,766,000
Manitoba			224,214		257,040	396,854	435,533	883,000	1,289,000	2,317,000
Saskatchewan			621,409		628,690	892,271	1,062,489	1,242,000	1,822,000	2,281,000
Alberta			758,154		1,009,345	1,468,567	1,806,043	2,026,000	4,016,000	4,983,000
British Columbia			263,097		301,950	374,850	364,735	486,000	603,000	679,000

SWINE.

Canada	34,368,000	31,157,000	26,986,621		26,664,735	42,418,325	48,363,346	60,700,000	92,886,000	112,751,000
Prince Edward Island			341,535		261,697	614,923	507,452	766,000	947,000	1,183,000
Nova Scotia			538,809		482,062	849,877	959,634	935,000	1,433,000	2,020,000
New Brunswick			654,704		573,754	1,300,052	1,268,602	1,202,000	1,853,000	2,219,000
Quebec			5,399,533		5,036,054	9,087,028	9,187,225	9,032,000	20,204,000	25,920,000
Ontario			13,877,817		12,029,763	19,606,735	20,750,371	25,283,000	31,211,000	43,896,000
Manitoba			1,604,277		1,572,180	2,034,134	2,348,369	3,500,000	4,157,000	7,517,000
Saskatchewan			2,512,540		3,392,096	4,396,978	9,859,436	9,022,000	14,492,000	14,595,000
Alberta			1,995,421		2,945,813	4,062,568	2,905,654	10,260,000	17,708,000	14,437,000
British Columbia			361,985		371,316	466,030	576,603	700,000	791,000	955,000

* 1912 figures not available.

TABLE III.—Average Farm Value per Head of Farm Live Stock by Provinces and Years.

MILCH COWS.

Province.	1909	1910	1911	1912*	1913	1914	1915	1916	1917	1918
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts.	$ cts.	$ cts.
Canada	36 00	42 00	42 22	–	42 10	57 47	61 57	70 25	85 50	87 00
Prince Edward Island	31 00	32 00	30 62	–	29 30	39 09	41 56	52 00	63 50	71 00
Nova Scotia	33 00	37 00	32 49	–	32 47	39 98	44 51	53 00	63 25	65 00
New Brunswick	29 00	33 00	30 33	–	31 80	40 00	39 96	48 50	63 00	65 00
Quebec	33 00	39 00	38 95	–	37 51	47 10	30 74	62 00	81 50	79 00
Ontario	40 00	48 00	47 15	–	47 15	64 28	69 55	76 00	92 50	96 00
Manitoba	34 00	40 00	40 22	–	40 25	61 90	65 12	73 50	88 25	91 00
Saskatchewan	38 00	41 00	43 25	–	43 25	65 84	69 14	72 50	85 25	91 00
Alberta	35 00	39 00	43 13	–	43 12	66 38	68 64	77 00	89 25	93 00
British Columbia	51 00	57 00	58 98	–	58 88	88 75	90 58	94 00	103 00	106 00

OTHER CATTLE.

Canada	–	–	21 95	–	22 10	42 66	44 56	54 25	57 25	61 00
Prince Edward Island	–	–	11 87	–	10 55	25 48	27 44	34 50	37 75	44 00
Nova Scotia	–	–	19 19	–	19 22	28 93	31 95	37 50	45 00	44 00
New Brunswick	–	–	12 24	–	12 32	26 75	27 92	33 00	39 50	41 00
Quebec	–	–	12 48	–	12 48	39 60	40 26	50 50	45 75	45 00
Ontario	–	–	22 32	–	22 56	45 30	47 26	65 00	62 75	67 00
Manitoba	–	–	22 52	–	22 55	41 15	43 89	51 00	57 25	64 00
Saskatchewan	–	–	30 94	–	30 94	44 27	47 39	51 00	58 50	66 00
Alberta	–	–	27 53	–	27 54	45 78	48 81	56 00	64 25	70 00
British Columbia	–	–	28 60	–	28 56	59 50	49 56	55 00	65 00	67 00

SHEEP.

Canada	5 89	6 30	4 92	–	5 01	7 07	7 96	10 25	15 00	16 00
Prince Edward Island	4 55	5 82	4 03	–	4 00	6 05	6 97	9 00	13 75	15 00
Nova Scotia	4 13	4 48	3 60	–	3 94	4 70	5 28	6 50	9 00	10 00
New Brunswick	4 22	4 60	3 37	–	3 34	4 63	5 25	6 50	10 00	12 00
Quebec	5 47	5 72	4 25	–	4 26	6 60	7 48	10 50	15 00	14 00
Ontario	6 63	7 00	5 97	–	6 03	8 70	10 03	12 50	18 50	20 00
Manitoba	7 08	6 50	6 01	–	6 00	8 76	8 56	11 50	16 00	17 00
Saskatchewan	7 01	7 00	5 44	–	5 44	7 08	7 97	10 00	14 25	17 00
Alberta	6 80	6 30	5 68	–	5 67	6 96	7 57	10 00	14 50	15 00
British Columbia	6 72	–	6 70	–	6 71	8 33	7 86	10 50	13 75	15 00

SWINE.

Canada	–	–	7 42	–	7 73	12 35	15 54	17 50	25 75	26 00
Prince Edward Island	–	–	6 06	–	5 98	14 74	12 44	20 00	27 00	29 00
Nova Scotia	–	–	8 50	–	8 52	15 77	17 97	18 00	28 75	30 00
New Brunswick	–	–	7 49	–	7 45	17 73	17 49	17 00	26 75	28 00
Quebec	–	–	6 80	–	7 61	14 32	14 52	17 00	28 50	26 00
Ontario	–	–	7 19	–	7 28	12 62	14 12	18 00	25 25	27 00
Manitoba	–	–	8 51	–	8 51	10 92	14 38	17 00	23 75	26 00
Saskatchewan	–	–	8 78	–	8 77	9 67	23 97	17 00	25 25	28 00
Alberta	–	–	8 40	–	8 40	10 23	12 65	17 00	24 25	24 00
British Columbia	–	–	10 77	–	10 75	11 94	14 96	18 50	21 00	24 00

Average values of Swine per 100 lbs. live weight and average values of other Horned Cattle: (*a*) Under 1 year; (*b*) 1 year to under 3 years; (*c*) 3 years and over for years 1909, 1910, 1914, 1915, 1916, 1917 and 1918 may be secured from Monthly Bulletin of Agricultural Statistics, February, 1919, pages 32, 33.

* 1912 figures not available.

TABLE IV.—Animals on Farms and Field Crops, 1910-1918—Index Numbers showing Relative Progress of different Branches of Agriculture.

Asimals on Farms—Average 1911-1915 = 100.
Field Crops—Average 1911-1914 = 100.

CANADA.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips Mangolds	Sugar Beets
1910	–	–	–	–	–	74·0	74·6	114·6
1911	92·1	97·6	106·8	103·7	105·9	94·7	113·5	106·7
1912	95·5	98·1	103·7	99·3	101·1	112·9	115·7	122·6
1913	101·6	103·2	106·1	101·5	101·1	104·5	96·5	90·2
1914	104·3	100·7	91·2	98·2	100·7	113·9	99·7	65·9
1915	106·3	100·4	92·1	97·2	91·2	80·3	87·0	86·0
1916	115·6	106·7	101·9	96·5	101·9	84·2	53·4	43·3
1917	121·1	120·6	127·9	113·0	106·1	106·2	91·7	71·7
1918	128·0	133·4	176·4	145·6	125·8	138·8	177·4	109·8

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	67·4	70·9	69·6	71·3	32·6	116·1	94·4	85·6	70·2	96·6	54·1	94·7
1911	117·8	106·3	107·2	115·6	77·3	113·7	117·4	107·0	109·4	119·5	104·7	93·5
1912	114·3	114·0	119·2	112·7	200·5	94·5	105·3	110·2	115·8	103·5	131·4	106·4
1913	118·2	117·8	116·6	106·7	134·6	95·5	91·6	101·0	116·9	92·8	109·3	91·6
1914	82·3	91·1	87·4	93·6	55·1	81·2	91·2	96·1	87·7	87·6	100·4	113·8
1915	200·5	135·4	130·3	115·4	46·9	83·9	82·7	98·1	150·4	90·7	120·0	118·4
1916	134·0	119·3	103·2	153·5	63·4	53·6	47·2	56·4	117·2	124·1	131·9	66·8
1917	119·2	117·3	132·9	179·0	45·5	73·1	145·7	76·7	114·8	116·9	120·7	94·2
1918	96·4	124·1	186·5	394·7	46·5	74·9	407·6	151·2	120·8	126·2	205·3	167·6

NOVA SCOTIA.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	57·4	78·1	–
1911	98·5	99·9	103·9	103·0	109·8	90·4	112·5	–
1912	99·1	100·5	102·6	100·8	106·1	151·4	125·9	–
1913	100·4	100·8	101·0	101·5	98·1	86·0	105·1	–
1914	100·5	99·1	97·5	98·8	93·4	114·8	78·3	–
1915	101·5	99·6	95·0	95·8	92·6	76·3	80·8	–
1916	103·0	100·6	92·5	93·7	90·0	111·1	81·7	–
1917	103·0	101·6	88·8	93·7	86·4	114·9	71·7	–
1918	112·5	122·0	163·9	121·2	116·3	156·6	209·3	–

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	85·6	96·3	101·6	94·6	–	41·1	62·7	73·3	93·2	84·1	32·5	115·6
1911	108·6	79·4	102·1	88·1	–	109·8	107·4	99·8	84·4	105·1	129·9	88·9
1912	102·1	105·7	102·1	88·1	–	109·8	122·8	115·7	106·4	95·5	129·9	117·7
1913	102·8	106·5	95·7	141·0	–	147·1	112·5	108·0	106·2	101·7	129·9	88·9
1914	100·9	112·0	98·5	88·1	–	93·2	94·6	103·2	109·8	113·7	77·9	88·9
1915	95·1	112·9	91·7	79·3	–	77·9	75·2	92·3	108·6	111·2	90·9	51·1
1916	100·5	130·5	87·8	95·2	–	70·3	70·6	98·1	123·3	115·5	194·8	97·8
1917	98·3	116·4	84·8	79·3	–	52·7	90·8	83·1	110·5	103·8	129·9	97·7
1918	280·4	174·9	247·8	13·6	–	724·5	73·1	163·4	184·2	101·9	–	977·5

TABLE IV.—Animals on Farms and Field Crops, 1910-1918—Index Numbers showing Relative Progress of different Branches of Agriculture.—Continued.

Animals on Farms—Average 1911-1915=100.
Field Crops—Average 1911-1914=100.

NEW BRUNSWICK.

	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	61·1	87·8	–
1911	99·9	102·4	107·1	103·4	110·3	103·2	133·2	–
1912	100·1	104·2	106·7	97·2	108·4	88·3	89·3	–
1913	99·4	100·8	101·7	88·3	97·2	124·2	109·8	–
1914	100·3	96·8	93·6	138·4	92·5	123·1	79·9	–
1915	100·4	95·9	90·9	72·6	91·5	67·5	86·4	–
1916	99·4	94·5	86·9	69·3	89·2	87·5	103·8	–
1917	99·4	94·5	84·3	67·9	87·4	80·5	75·9	–
1918	101·6	113·3	157·1	91·5	100·7	106·1	212·6	–

Field Crops.

	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	83·1	93·7	81·6	–	–	60·2	77·0	72·7	88·9	85·0	32·7	146·6
1911	115·5	101·2	113·6	–	–	155·8	136·4	109·7	103·6	114·5	147·0	126·7
1912	96·3	94·8	106·4	–	–	91·6	110·9	98·7	95·8	113·1	91·5	88·7
1913	109·8	100·6	106·4	–	–	100·8	73·3	112·5	103·3	88·6	130·7	107·7
1914	95·5	109·7	92·0	–	–	91·6	102·3	106·4	108·4	98·7	98·0	30·4
1915	108·9	94·0	69·0	–	–	61·4	97·2	83·3	92·0	100·4	–	48·8
1916	98·7	102·1	64·7	–	–	60·5	64·8	76·7	96·4	107·9	–	63·3
1917	78·3	72·3	56·9	–	–	55·1	99·8	70·1	71·9	115·4	–	48·8
1918	383·7	119·2	234·6	–	–	550·7	1,459·7	101·7	126·6	141·1	588·2	988·0

PRINCE EDWARD ISLAND.

	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	71·1	83·7	–
1911	99·5	106·6	107·4	104·5	120·9	94·4	103·9	–
1912	98·7	101·1	101·8	100·5	108·2	114·1	100·4	–
1913	99·6	99·3	101·1	98·1	93·9	105·2	112·5	–
1914	100·0	96·8	96·1	97·7	89·5	115·2	99·6	–
1915	102·2	96·2	93·6	99·2	87·5	60·2	99·3	–
1916	106·8	94·2	90·1	101·7	82·2	108·1	106·7	–
1917	107·9	94·2	86·5	103·7	75·6	103·6	114·5	–
1918	90·3	84·7	103·7	83·8	87·5	90·7	120·0	–

Field Crops.

	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	80·4	82·4	94·2	–	–	34·2	–	71·8	81·8	88·0	2·3	72·4
1911	95·6	84·3	97·1	–	–	105·9	–	90·4	85·8	100·1	115·3	123·4
1912	93·4	116·3	119·4	–	–	105·9	–	120·6	114·6	83·9	126·8	65·8
1913	100·8	97·1	91·4	–	–	84·7	–	98·9	97·4	115·0	155·6	139·8
1914	129·8	120·0	98·0	–	–	169·4	–	118·2	12 ·4	113·0	–	98·7
1915	104·9	108·0	87·3	–	–	58·2	–	102·0	107·1	118·7	–	139·8
1916	92·7	117·1	86·4	–	–	68·8	–	105·5	114·0	114·3	–	135·7
1917	83·7	102·4	82·1	–	–	44·3	–	98·3	100·3	103·3	–	74·1
1918	97·2	92·3	133·3	–	–	386·4	–	191·4	98·4	113·0	–	90·5

TABLE IV.—Animals on Farms and Field Crops, 1910-1918.—Index Numbers showing Relative Progress of different Branches of Agriculture.—Continued.

Animals on Farms—Average 1911-1915=100.
Field Crops—Average 1911-1914=100.

QUEBEC.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	86·8	134·6	–
1911	99·7	101·1	104·9	106·7	114·3	88·0	104·9	–
1912	99·2	101·5	104·6	103·9	107·7	89·1	81·3	–
1913	99·9	102·3	104·3	100·9	95·4	114·4	87·4	–
1914	100·5	98·5	94·1	95·6	91·4	121·7	91·7	–
1915	100·6	96·7	92·1	92·8	91·2	97·7	83·7	–
1916	89·8	85·9	80·5	83·3	76·6	81·9	70·5	–
1917	102·4	122·3	144·0	142·2	102·6	101·4	419·4	–
1918	134·2	156·2	187·3	160·6	143·7	217·3	751·3	–

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	88·2	90·7	104·3	89·3	127·0	94·7	83·1	88·0	91·0	105·4	76·7	130·2
1911	118·8	100·9	99·6	119·9	123·7	113·3	123·7	103·9	101·8	139·6	164·6	112·2
1912	94·6	90·1	97·6	103·7	85·6	98·4	91·2	106·8	92·8	84·6	114·1	87·7
1913	102·3	105·0	99·3	93·5	85·6	98·9	105·3	101·0	104·0	90·7	74·1	88·0
1914	96·1	113·3	99·2	93·5	78·0	94·7	96·6	100·2	110·3	79·7	70·6	81·8
1915	137·0	113·5	98·9	86·9	66·6	88·5	111·8	102·1	111·5	82·1	95·2	101·2
1916	93·2	65·7	63·9	70·7	50·4	66·2	84·7	86·6	66·6	116·5	82·3	85·6
1917	377·1	87·3	134·4	225·4	447·2	174·8	898·2	119·5	103·0	112·9	101·1	202·6
1918	612·5	141·7	199·6	283·0	789·7	98·6	2,026·8	187·5	164·4	151·6	109·4	216·2

ONTARIO.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	86·6	74·4	117·2
1911	93·8	96·2	118·3	110·0	113·2	80·3	111·7	103·6
1912	93·0	96·2	111·0	100·2	102·8	113·3	119·0	121·0
1913	104·3	106·2	117·4	104·4	100·3	90·6	92·0	88·8
1914	104·5	101·1	78·0	94·8	94·3	129·0	102·8	69·5
1915	104·4	100·3	75·2	90·5	89·2	71·9	92·6	90·7
1916	103·5	100·7	72·5	87·2	85·3	40·7	42·9	45·7
1917	102·5	100·7	69·6	88·1	75·0	95·0	67·2	75·1
1918	84·7	102·6	142·4	143·9	100·6	97·0	136·0	115·8

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	104·9	93·5	98·4	81·3	69·3	119·5	96·7	86·6	94·4	100·0	62·9	92·6
1911	104·6	89·2	96·0	114·0	103·7	112·4	116·5	107·7	96·0	106·8	100·5	90·6
1912	92·1	102·1	105·6	112·9	119·6	93·5	106·6	111·1	102·9	122·3	139·5	108·3
1913	105·0	110·6	102·1	103·4	137·1	95·1	89·1	100·1	106·7	89·2	105·8	90·6
1914	93·4	104·5	97·9	88·5	70·2	79·4	91·0	94·1	100·0	81·8	91·2	117·9
1915	159·9	129·2	107·5	102·3	51·8	83·4	79·8	98·1	123·3	92·0	107·8	123·0
1916	94·8	53·4	52·5	79·7	35·1	49·8	42·2	49·9	57·5	138·4	111·1	65·0
1917	86·3	103·1	78·3	79·6	43·5	58·5	56·3	63·1	89·9	115·3	94·2	80·6
1918	80·6	138·6	169·7	119·6	164·0	66·0	184·6	141·2	133·6	104·0	217·5	159·0

TABLE IV.—Animals on Farms and Field Crops, 1910-1918.—Index Numbers showing Relative Progress of different Branches of Agriculture—Continued.

Animals on Farms—Average 1911-1915=100.
Field Crops—Average 1911-1914=100

MANITOBA.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	62·7	46·3	–
1911	92·7	100·8	107·4	85·9	104·0	120·2	126·4	–
1912	97·1	96·4	102·5	93·9	101·2	135·4	135·3	–
1913	100·5	99·2	98·6	98·6	101·9	112·1	94·3	–
1914	104·7	101·4	96·7	104·3	102·8	69·5	97·6	–
1915	105·0	102·2	94·7	117·2	90·1	56·2	62·0	–
1916	107·1	127·4	137·4	176·7	113·6	103·1	42·1	–
1917	107·1	131·2	137·4	185·6	96·6	79·8	43·2	–
1918	127·2	146·5	200·1	315·0	157·0	182·3	232·6	–

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	67·8	64·2	53·0	33·1	24·9	61·1	–	21·7	64·3	57·8	7·7	21·1
1911	124·5	127·0	121·7	117·9	162·2	113·1	–	133·8	125·5	118·1	94·7	113·4
1912	125·1	120·9	128·8	119·0	176·3	125·7	–	168·5	124·1	119·9	127·1	125·3
1913	105·9	120·1	116·5	116·7	89·0	–	–	101·6	113·0	111·1	148·8	142·8
1914	76·7	67·6	80·0	113·3	47·6	–	–	74·3	73·0	93·1	121·7	107·4
1915	137·7	107·4	135·6	235·7	16·9	–	–	54·5	123·8	41·7	67·6	29·8
1916	58·9	102·5	111·8	631·2	29·6	–	–	111·5	83·7	65·7	165·6	40·3
1917	81·5	96·0	129·7	723·4	20·7	–	–	107·5	93·2	34·7	123·1	71·0
1918	95·7	115·3	227·7	4,460·2	153·6	–	–	2,121·2	123·3	34·3	109·5	101·3

SASKATCHEWAN.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	60·3	5·9	–
1911	88·1	92·7	94·3	94·6	76·0	113·8	113·8	–
1912	95·8	94·6	96·1	95·1	91·4	135·4	140·5	–
1913	100·8	99·7	97·6	95·7	102·7	106·2	111·5	–
1914	105·9	104·7	98·8	104·3	120·7	84·4	108·3	–
1915	109·4	108·3	113·3	110·4	109·2	79·5	9·8	–
1916	146·2	164·9	143·6	102·9	140·9	151·1	13·8	–
1917	152·9	181·3	178·5	105·9	152·4	186·1	58·3	–
1918	171·9	180·6	192·9	111·1	138·4	143·6	74·3	–

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	70·1	64·1	41·8	23·1	34·6	36·5	–	17·6	64·4	50·9	7·2	16·0
1911	114·1	117·0	118·2	121·2	68·1	111·8	–	129·7	113·0	81·8	72·0	155·9
1912	111·9	127·8	130·9	113·3	204·5	153·8	–	143·4	124·7	101·6	107·9	32·8
1913	127·1	124·0	142·2	133·1	138·3	97·9	–	151·3	126·9	128·6	133·1	180·5
1914	76·9	67·2	66·9	107·3	54·4	–	–	58·0	70·9	137·7	179·9	114·8
1915	234·6	157·7	130·4	403·4	46·7	113·2	–	117·9	137·9	39·5	172·7	73·8
1916	154·3	177·5	121·7	1,088·9	58·5	727·0	–	973·2	159·2	66·6	316·5	96·8
1917	123·3	133·9	192·0	1,983·8	41·8	627·7	–	2,483·6	1,267·6	417·0	550·4	513·5
1918	96·7	116·6	162·2	2,821·5	37·3	1,188·3	–	966·7	105·6	408·9	340·9	1,036·9

TABLE IV.— Animals on Farms and Field Crops, 1910-1918.—Index Numbers showing Relative Progress of different Branches of Agriculture— Concluded.

Animals on Farms—Average 1911-1915=100.
Field Crops—Average 1911-1914 =100

ALBERTA.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	56·5	21·7	67·6
1911	84·6	88·2	96·0	74·5	79·5	111·1	133·0	161·0
1912	93·8	94·3	95·3	75·4	93·3	139·3	117·4	149·5
1913	100·7	100·6	99·1	99·3	117·4	105·0	113·1	115·0
1914	107·9	107·0	102·6	117·7	132·9	88·1	114·8	6·9
1915	113·1	109·9	107·0	133·1	76·9	97·1	59·3	–
1916	131·7	165·7	143·2	163·2	202·0	115·4	70·9	–
1917	149·2	194·7	196·1	154·5	244·4	178·8	339·1	–
1918	164·3	196·4	221·0	185·3	201·4	75·3	351·8	–

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	31·6	29·7	51·4	33·3	8·4	57·6	–	50·4	31·3	49·6	24·0	136·0
1911	127·8	108·8	90·2	120·2	119·7	105·3	–	115·8	114·0	106·7	98·0	79·6
1912	119·8	124·6	127·9	115·0	161·9	118·5	–	133·8	123·8	113·0	112·0	68·3
1913	120·0	131·8	131·1	121·4	124·1	111·9	–	100·7	127·8	108·6	116·7	125·1
1914	100·8	105·2	99·5	110·1	66·0	106·7	–	99·3	103·0	120·1	149·3	91·0
1915	232·3	154·5	203·3	114·3	72·0	42·1	–	121·4	181·1	221·6	172·7	136·5
1916	227·3	188·3	202·3	134·2	140·8	171·2	–	185·3	200·9	300·9	254·8	96·7
1917	185·0	159·0	215·0	193·1	105·1	426·7	–	853·3	170·5	658·0	300·6	227·6
1918	82·9	111·1	160·6	252·0	51·6	474·1	–	830·2	105·3	359·2	226·8	216·2

BRITISH COLUMBIA.

—	Animals on Farms					Roots		
	Horses	Milch Cows	Other Cattle	Sheep	Swine	Potatoes	Turnips, Mangolds, etc.	Sugar Beets
1910	–	–	–	–	–	53·7	65·2	–
1911	95·8	95·8	104·0	90·8	94·3	124·4	114·0	–
1912	99·7	96·0	99·8	94·1	91·2	131·5	89·4	–
1913	101·0	100·4	99·0	104·0	96·9	102·4	131·5	–
1914	101·3	100·7	97·9	104·0	109·5	88·1	99·9	–
1915	102·4	107·1	99·3	107·2	108·1	130·2	114·6	–
1916	102·3	110·9	101·9	106·9	106·1	95·2	122·4	–
1917	92·0	138·3	189·1	101·4	105·7	82·4	104·7	–
1918	73·6	143·8	192·9	104·7	111·7	112·7	160·8	–

Field Crops.

—	Wheat	Oats	Barley	Rye	Flax	Peas	Beans	Other Grain	Total Grain	Hay and Clover	Alfalfa	Fodder Corn
1910	58·9	68·3	54·9	–	–	105·7	83·1	14·0	65·8	69·9	38·7	91·0
1911	110·6	95·5	123·5	–	–	108·2	121·2	73·0	97·7	103·5	121·2	109·7
1912	114·6	100·7	124·6	–	–	103·4	77·7	95·9	102·9	106·2	109·5	99·8
1913	110·3	108·1	93·7	–	–	84·1	118·1	168·9	109·5	102·5	121·2	99·8
1914	105·5	127·4	103·3	–	–	98·6	–	148·2	124·2	117·9	109·5	99·8
1915	150·1	176·3	113·8	–	–	93·0	–	113·3	168·1	131·0	168·1	179·6
1916	141·5	145·8	132·1	–	–	105·8	–	141·7	144·0	156·5	140·7	119·7
1917	176·9	130·0	171·4	–	–	76·5	–	80·6	134·2	80·1	87·6	522·1
1918	233·3	62·3	222·6	–	–	113·0	792·4	75·2	90·1	72·8	156·0	678·4

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks.

[Not including Unclassified Animals or Direct Shipments.]

CATTLE.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1917						
Jan. 4	3,772	1,709	884	804	–	7,169
" 11	5,777	1,894	1,687	1,648	–	11,006
" 18	7,117	1,537	1,363	1,279	–	11,296
" 25	3,629	2,398	2,148	657	–	8,832
Feb. 1	4,825	2,347	1,850	980	–	10,002
" 8	4,151	1,785	1,560	735	–	8,231
" 15	4,180	1,277	2,254	683	–	8,394
" 22	2,557	1,570	1,134	1,014	–	6,275
Mar. 1	3,963	1,105	1,302	745	–	7,115
" 8	4,124	1,213	1,282	1,115	–	7,734
" 15	2,657	1,185	1,598	940	–	6,380
" 22	3,646	1,232	2,333	882	–	8,093
" 29	5,438	1,324	2,403	928	–	10,093
April 5	4,072	1,131	2,581	957	–	8,741
" 12	3,709	366	1,925	1,325	–	7,325
" 19	4,952	1,163	2,047	1,286	–	9,450
" 26	3,462	1,563	2,403	589	–	8,017
May 3	4,296	1,327	2,285	1,225	55	9,188
" 10	4,574	1,217	2,405	882	211	9,289
" 17	5,507	1,325	1,670	898	266	9,666
" 24	4,439	1,133	1,873	1,465	318	9,248
" 31	4,076	1,711	2,004	1,051	258	9,100
June 7	3,640	1,315	2,836	1,148	309	9,248
" 14	4,560	1,093	2,296	940	640	9,529
" 21	3,792	702	2,566	788	581	8,429
" 28	5,158	1,147	2,006	529	321	9,161
July 5	4,751	1,777	2,153	636	438	9,755
" 12	4,263	2,640	2,577	659	552	10,691
" 19	5,203	1,371	2,424	525	329	9,852
" 26	5,930	1,376	2,681	874	349	11,180
Aug. 2	3,505	1,464	3,837	817	656	10,279
" 9	5,095	1,736	5,467	766	547	13,611
" 16	6,063	3,126	5,416	788	439	15,832
" 23	7,665	2,608	6,967	1,211	543	18,994
" 30	7,380	1982	9,491	1,369	419	20,641
Sept. 6	7,521	2,950	9,332	1,803	912	22,518
" 13	7,636	3,718	10,363	1,850	1,223	24,790
" 20	8,706	3,753	8,765	2,333	1,086	24,633
" 27	7,440	4,151	7,921	2,464	1,225	23,201
Oct. 4	8,065	4,337	11,196	2,865	1,376	27,839
" 11	8,076	4,072	10,709	3,582	708	27,147
" 18	9,084	3,268	13,378	2,597	1,405	29,732
" 25	9,271	6,467	9,313	2,901	1,098	29,050
Nov. 1	8,388	4,317	14,643	3,499	1,315	32,162
" 8	8,218	4,545	12,419	3,905	1,125	30,212
" 15	9,074	4,407	10,655	3,422	1,782	29,340
" 22	6,961	3,149	11,243	3,525	1,962	26,840
" 29	7,158	3,503	9,794	3,621	890	24,966
Dec. 6	7,971	2,782	7,284	4,149	785	22,971
" 13	5,556	3,347	7,344	2,329	1,078	19,654
" 20	3,294	2,610	4,970	1,018	413	12,305
" 27	1,472	1,184	2,513	1,410	322	6,901

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

CATTLE—Continued.

	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1918 Week ending:						
Jan. 3	4,021	705	461	871	141	6,199
" 10	4,993	1,835	1,957	1,279	218	10,282
" 17	1,994	1,372	2,162	1,068	192	6,788
" 24	8,032	1,729	2,205	1,348	382	13,696
" 31	3,449	2,025	2,810	1,632	403	10,319
Feb. 7	4,111	1,446	1,722	1,758	265	9,302
" 14	2,834	799	1,721	1,235	566	7,155
" 21	5,101	1,203	1,335	876	285	8,800
" 28	5,060	1,072	1,249	969	224	8,583
Mar. 7	5,428	1,440	1,002	1,065	184	9,119
" 14	4,199	843	1,623	1,346	317	8,328
" 21	6,081	895	2,350	1,561	311	11,198
" 28	5,165	1,201	2,415	1,162	388	10,331
April 4	4,830	388	1,582	1,163	549	8,512
" 11	5,035	1,027	1,575	1,115	430	9,182
" 18	5,769	1,265	1,406	1,111	240	9,791
" 25	4,801	1,242	1,784	899	343	9,069
May 2	6,037	708	2,976	1,694	477	11,012
" 9	6,591	1,607	2,550	1,533	405	12,686
" 16	6,520	1,541	2,845	1,613	283	12,802
" 23	5,745	1,251	2,097	1,611	544	11,248
" 30	3,725	721	1,393	2,423	356	8,618
June 6	3,180	716	2,344	993	535	7,768
" 13	4,112	1,067	2,722	848	297	9,046
" 20	5,892	2,011	3,084	852	259	12,098
" 27	5,133	2,256	2,728	780	409	11,306
July 4	4,442	1,081	2,339	1,105	526	9,493
" 11	4,380	1,892	2,794	2,011	930	12,007
" 18	3,886	1,361	4,500	3,965	1,167	14,879
" 25	4,857	1,223	6,738	3,006	1,479	17,303
Aug. 1	4,439	1,816	5,686	3,185	777	15,903
" 8	3,889	2,433	5,884	3,649	988	16,843
" 15	4,759	4,176	8,767	5,207	1,391	24,300
" 22	5,032	4,196	11,824	4,646	1,396	27,094
" 29	5,663	2,998	7,993	4,176	1,383	22,213
Sept. 5	7,030	2,886	6,380	2,906	1,501	20,703
" 12	6,888	3,070	5,319	3,150	1,641	20,068
" 19	9,617	4,705	7,518	3,679	1,485	27,004
" 26	8,524	4,629	13,575	4,100	1,748	32,576
Oct. 3	8,456	4,729	17,227	5,258	2,616	38,286
" 10	6,638	4,159	9,796	5,151	2,046	27,790
" 17	6,236	3,832	11,245	4,451	2,451	28,215
" 24	8,076	5,421	10,336	2,868	2,044	28,745
" 31	4,952	4,786	8,717	5,094	1,984	25,533
Nov. 7	7,532	3,223	11,586	3,542	936	29,819
" 14	5,678	6,894	8,591	4,863	822	26,848
" 21	5,054	3,774	11,241	4,141	1,173	25,383
" 28	10,824	4,042	9,053	3,467	1,090	28,476
Dec. 5	12,328	6,288	9,050	4,752	739	33,157
" 12	10,419	6,720	10,646	5,521	1,189	34,495
" 19	7,371	5,425	9,850	5,018	1,252	28,916
" 26	1,617	2,085	4,760	1,492	1,023	10,977

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

CATTLE—Concluded.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1919 Week ending:						
Jan. 2	2,593	1,548	1,184	590	319	6,234
" 9	5,851	2,033	2,695	2,580	757	13,916
" 16	7,312	3,271	4,323	2,713	821	18,440
" 23	8,560	3,018	3,581	3,612	966	19,737
" 30	4,684	1,420	3,146	3,177	967	13,394
Feb. 6	5,246	984	3,282	2,293	1,276	13,081
" 13	8,654	1,200	2,564	2,003	1,445	15,866
" 20	6,220	1,527	3,005	3,794	1,264	15,810
" 27	6,740	1,711	3,351	2,321	1,065	15,388
Mar. 6	7,349	1,218	1,544	1,786	530	12,427
" 13	6,341	1,300	2,212	2,137	516	12,506
" 20	5,009	1,074	2,843	2,495	539	11,960
" 27	5,808	1,124	1,865	1,479	1,318	11,594
April 3	5,552	921	3,101	1,797	442	11,813
" 10	7,676	1,102	2,691	1,287	563	13,319
" 17	4,106	1,147	2,987	1,272	496	10,008
" 24	2,514	198	2,913	985	337	6,947
May 1	5,908	731	1,878	1,802	450	10,469
" 8	3,190	1,035	2,984	681	399	8,289
" 15	6,191	1,393	2,968	1,169	520	12,241
" 22	7,104	1,522	1,755	1,489	580	12,510
" 29	5,051	694	1,661	1,371	296	9,073
June 5	3,481	1,145	309	1,769	167	6,931
" 12	4,765	659	701	1,198	190	7,513
" 19	3,809	723	644	1,507	558	7,241
" 26	4,793	650	563	2,765	651	9,422
July 3	5,578	1,157	998	2,238	653	10,624
" 10	7,168	1,065	2,252	2,368	792	14,245
" 17	8,226	2,401	2,273	3,567	1,117	17,584
" 24	7,382	2,073	4,100	3,661	981	18,197
" 31	6,426	2,461	7,873	5,172	892	22,824
Aug. 7	4,486	3,458	5,993	5,462	1,794	21,193
" 14	6,619	4,097	5,923	4,039	1,614	22,292
" 21	9,207	3,424	8,930	5,232	1,446	28,249
" 28	7,565	3,850	10,493	4,608	1,544	28,060
Sept. 4	8,556	4,176	12,233	3,330	1,707	30,002
" 11	7,830	3,201	6,956	3,536	1,268	22,791
" 18	8,244	4,137	7,520	4,966	791	25,658
" 25	6,940	4,954	8,405	4,018	1,326	25,642
Oct. 2	7,572	4,795	7,815	3,615	1,617	25,414
" 9	9,389	6,796	11,653	5,098	1,648	34,584
" 16	11,869	6,396	14,817	5,442	2,137	40,661
" 23	9,335	5,534	17,185	3,902	2,268	38,224
" 30	11,643	4,324	16,390	5,753	2,812	40,922
Nov. 6	12,265	5,289	15,376	6,569	3,385	42,884
" 13	9,618	8,582	15,723	3,669	4,248	41,840
" 20	13,036	6,289	13,800	5,950	2,239	41,314
" 27	13,068	5,870	9,205	6,844	1,072	36,059
Dec. 4	9,858	5,041	13,990	5,816	1,582	36,287
" 11	11,495	4,721	9,812	6,548	1,637	34,213
" 18	7,029	3,844	8,429	5,613	1,842	26,748
" 25	968	2,419	5,697	2,134	1,786	13,004
" 31	1,272	1,282	948	797	449	4,748

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

CALVES.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1917 Week ending:						
Jan. 4	692	464	44	–	–	1,200
" 11	601	575	45	–	–	1,221
" 18	669	404	38	–	–	1,111
" 25	480	537	87	–	–	1,104
Feb. 1	611	810	130	–	–	1,551
" 8	610	445	63	–	–	1,118
" 15	530	378	101	–	–	1,009
" 22	701	976	19	–	–	1,696
Mar. 1	759	730	55	–	–	1,544
" 8	635	1,437	99	–	–	2,171
" 15	650	2,639	175	–	–	3,464
" 22	629	2,923	151	–	–	3,703
" 29	1,603	2,570	165	–	–	4,338
April 6	1,696	4,972	145	–	–	6,813
" 12	1,524	5,045	72	–	–	6,641
" 19	2,176	5,351	65	–	–	7,592
" 26	1,138	4,134	185	–	–	5,457
May 3	2,322	5,291	128	–	28	7,769
" 10	1,191	3,949	145	–	177	5,462
" 17	1,530	4,172	92	–	93	5,887
" 24	1,110	2,619	126	–	73	3,928
" 31	1,189	4,242	113	–	116	5,660
June 7	901	3,064	228	–	20	4,213
" 14	1,359	3,905	155	4	46	5,469
" 21	739	2,421	179	6	–	3,348
" 28	1,135	3,069	118	9	3	4,334
July 5	1,019	2,174	207	–	8	3,408
" 12	1,106	2,704	142	49	6	4,007
" 19	954	1,473	189	75	12	2,703
" 26	858	1,137	187	65	9	2,256
Aug. 2	547	1,064	301	126	25	2,063
" 9	732	822	342	183	42	2,121
" 16	761	1,033	270	19	27	2,130
" 23	834	834	230	19	90	2,007
" 30	764	820	267	76	20	1,947
Sept. 6	700	891	196	118	114	2,019
" 13	737	1,211	378	299	99	2,724
" 20	969	1,248	361	67	36	2,681
" 27	640	1,362	268	135	178	2,583
Oct. 4	574	1,454	526	107	81	2,742
" 11	603	1,553	420	127	192	2,895
" 18	714	919	999	19	170	2,821
" 25	799	1,644	623	39	134	3,239
Nov. 1	678	1,171	755	49	235	2,888
" 8	740	974	501	207	99	2,521
" 15	628	890	457	155	178	2,308
" 22	460	589	426	25	364	1,86
" 29	584	750	487	21	186	2,028
Dec. 6	374	525	259	95	282	1,735
" 13	445	355	200	23	50	1,073
" 20	491	380	180	8	25	1,084
" 27	243	199	109	9	56	616

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

CALVES—Continued.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1918						
Week ending:						
Jan. 3	350	162	23	26	3	564
" 10	598	473	62	4	48	1,185
" 17	142	214	40	37	33	466
" 24	671	495	77	11	3	1,257
" 31	338	445	88	8	29	908
Feb. 7	411	395	56	1	31	884
" 14	582	420	41	15	34	1,092
" 21	679	904	28	9	28	1,648
" 28	568	612	22	11	136	1,349
Mar. 7	983	1,680	18	2	50	2,733
" 14	891	1,755	61	2	41	2,750
" 21	1,181	2,725	49	7	24	3,986
" 28	1,621	2,907	37	62	87	4,714
April 4	2,023	2,638	92	33	291	5,047
" 11	2,296	4,788	58	3	70	7,215
" 18	2,158	5,567	63	11	27	7,826
" 25	2,730	4,995	63	12	78	7,878
May 2	2,171	5,068	109	17	53	7,418
" 9	2,684	6,373	146	25	203	9,431
" 16	2,064	4,680	174	10	52	6,990
" 23	1,822	4,618	122	13	289	6,864
" 30	1,591	3,751	146	18	212	5,718
June 6	1,475	3,780	154	128	97	5,634
" 13	1,530	3,888	257	6	38	5,719
" 20	1,578	3,795	261	49	91	5,774
" 27	1,451	3,639	256	18	31	5,385
July 4	1,449	3,473	204	43	59	5,228
" 11	1,379	4,789	243	74	42	6,527
" 18	967	2,531	309	377	204	4,388
" 25	1,002	2,589	437	168	299	4,495
Aug. 1	1,050	1,207	299	115	113	2,784
" 8	643	1,396	339	280	189	2,847
" 15	819	1,862	386	260	131	3,458
" 22	594	1,737	451	294	111	3,187
" 29	722	1,381	339	89	107	2,638
Sept. 5	933	1,226	249	113	150	2,671
" 12	857	1,267	290	79	117	2,610
" 19	930	1,725	243	215	43	3,156
" 26	760	2,164	384	309	81	3,698
Oct. 3	650	1,641	576	691	137	3,695
" 10	631	1,258	384	551	98	2,952
" 17	520	1,276	475	238	60	2,569
" 24	621	1,179	472	186	239	2,697
" 31	499	1,345	376	442	209	2,871
Nov. 7	441	756	517	352	46	2,112
" 14	660	1,848	447	146	162	3,263
" 21	503	984	629	79	22	2,217
" 28	717	809	485	71	201	2,236
Dec. 5	898	1,236	316	126	49	2,625
" 12	813	1,204	370	64	202	2,653
" 19	603	703	429	147	95	1,977
" 26	184	358	97	56	101	796

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

CALVES—Concluded.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1919 Week ending:						
Jan. 2	289	303	6	12	11	621
" 9	540	348	46	84	9	1,027
" 16	598	444	158	100	28	1,328
" 23	650	462	50	64	128	1,354
" 30	503	348	63	54	71	1,039
Feb. 6	537	507	132	21	56	1,253
" 13	405	673	55	17	70	1,220
" 20	427	681	79	15	125	1,327
" 27	517	1,061	75	14	109	1,776
Mar. 6	883	1,502	39	12	43	2,479
" 13	1,018	1,904	81	21	85	3,109
" 20	1,361	3,052	89	4	206	4,712
" 29	1,200	3,081	141	36	149	4,607
April 3	1,137	3,569	113	5	141	4,965
" 10	1,793	5,410	83	11	65	7,362
" 17	2,118	5,039	84	8	14	7,263
" 24	2,067	3,977	138	26	38	6,246
May 1	2,748	5,742	150	26	85	8,751
" 8	594	4,151	167	4	142	4,958
" 15	2,373	5,123	165	9	243	7,913
" 22	2,485	3,707	101	47	119	6,459
" 29	2,151	3,152	41	37	41	5,422
June 5	1,383	4,188	32	34	8	5,645
" 12	1,612	3,413	101	21	7	5,154
" 19	1,681	4,679	65	34	39	6,498
" 26	1,754	2,445	146	63	142	4,550
July 3	1,679	3,340	179	94	167	5,459
" 10	1,337	2,826	287	464	163	5,077
" 17	1,551	3,286	502	649	209	6,197
" 24	1,752	4,647	528	681	130	7,738
" 31	1,487	5,328	1,146	850	131	8,942
Aug. 7	838	3,756	714	842	253	6,403
" 14	1,163	3,140	920	1,619	221	7,065
" 21	1,454	1,946	401	1,539	328	5,668
" 28	1,595	1,431	599	1,001	169	4,795
Sept. 4	1,332	1,903	1,088	747	326	5,396
" 11	1,109	1,181	586	1,047	90	4,013
" 18	922	1,910	811	951	113	4,707
" 25	889	3,040	763	771	81	5,544
Oct. 2	1,044	2,444	671	828	163	5,150
" 9	1,241	3,506	1,211	921	198	7,077
" 16	1,429	3,004	1,408	1,018	324	7,183
" 23	969	2,298	1,644	757	381	6,049
" 30	1,156	1,634	1,652	848	368	5,058
Nov. 6	954	1,274	1,184	899	322	4,633
" 13	788	2,192	1,519	340	714	5,553
" 20	839	2,057	1,207	613	258	4,974
" 27	883	1,351	761	734	65	3,794
Dec. 4	789	1,214	1,088	479	120	3,690
" 11	1,092	961	630	314	39	3,036
" 18	818	798	526	611	150	2,903
" 25	274	598	252	218	119	1,461
" 31	336	329	124	61	161	1,011

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

HOGS.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1917						
Week ending:						
Jan. 4	7,324	2,718	4,246	1,096	–	15,384
" 11	10,692	2,229	10,390	3,337	–	26,648
" 18	9,965	1,857	7,378	3,418	–	22,618
" 25	9,776	2,385	9,519	3,202	–	24,882
Feb. 1	11,338	3,475	4,561	1,826	–	21,500
" 8	6,350	1,933	4,234	2,143	–	14,660
" 15	9,259	1,794	8,726	2,755	–	22,534
" 22	6,834	3,290	4,317	2,452	–	16,893
Mar. 1	12,773	1,808	3,939	3,394	–	21,914
" 8	9,670	2,018	4,555	2,640	–	18,883
" 15	14,163	2,418	4,671	2,668	–	23,920
" 22	7,516	1,797	5,181	1,870	–	16,004
" 29	10,658	1,726	4,383	1,206	–	17,973
April 5	9,886	2,444	4,868	1,666	–	18,864
" 12	10,178	1,794	4,262	1,958	–	18,192
" 19	13,640	2,514	3,924	2,883	–	22,961
" 26	8,342	2,083	2,944	2,700	–	16,069
May 3	12,606	2,035	4,789	2,292	184	21,906
" 10	8,860	2,242	4,881	2,201	603	18,787
" 17	8,809	2,340	4,814	2,468	194	18,625
" 24	8,771	2,089	4,828	2,658	411	18,757
" 31	6,930	2,949	6,213	1,879	216	18,187
June 7	6,557	2,159	6,897	2,374	511	18,498
" 14	7,281	1,955	6,568	2,704	501	19,009
" 21	6,625	1,449	5,451	2,923	216	16,664
" 28	5,696	2,160	5,515	2,372	592	16,635
July 5	7,375	1,977	6,097	2,840	588	18,877
" 12	7,406	2,919	6,406	1,594	559	18,884
" 19	6,329	2,025	5,479	2,244	183	16,260
" 26	4,274	2,049	5,618	2,554	183	14,678
Aug. 2	3,700	1,089	4,848	2,031	327	11,995
" 9	6,887	1,876	4,720	2,935	513	16,931
" 16	5,132	3,077	6,035	1,481	458	16,183
" 23	7,467	2,410	3,806	1,680	471	15,834
" 30	6,835	4,630	3,438	2,222	346	17,471
Sept. 6	3,395	3,080	2,356	658	270	9,759
" 13	6,268	3,824	2,019	1,770	228	14,109
" 20	6,011	2,880	2,302	1,248	351	12,792
" 27	4,666	2,959	1,958	1,744	409	12,036
Oct. 4	8,947	3,302	2,882	1,080	386	16,297
" 11	7,913	3,620	2,327	1,308	367	15,535
" 18	7,643	3,378	3,287	1,456	301	16,065
" 25	8,805	2,671	3,273	1,061	324	16,134
Nov. 1	7,004	2,534	3,891	1,711	392	15,532
" 8	6,760	2,410	4,075	1,199	204	14,648
" 15	9,265	3,558	6,501	1,659	630	21,613
" 22	12,651	3,269	7,182	2,736	736	26,574
" 29	15,749	4,219	11,357	4,145	930	36,400
Dec. 6	7,823	2,049	8,718	3,410	1,308	23,308
" 13	10,631	1,553	8,209	2,031	764	23,188
" 20	14,085	3,205	12,189	5,386	1,164	36,029
" 27	3,339	1,739	6,903	3,178	742	15,901

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

HOGS—Continued.

1918 Week ending:	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
Jan. 3	7,229	1,046	2,394	2,604	445	13,718
" 10	9,863	3,153	9,853	6,179	783	29,831
" 17	3,321	1,348	9,600	3,639	754	18,662
" 24	13,933	2,852	6,528	4,809	1,543	29,665
" 31	4,244	2,042	7,472	2,150	592	16,500
Feb. 7	7,109	1,158	5,092	3,352	1,019	17,730
" 14	7,332	1,273	6,417	2,658	859	18,539
" 21	8,175	3,339	7,533	2,756	703	22,506
" 28	8,635	1,757	5,763	2,916	847	19,918
Mar. 7	10,794	2,537	4,214	1,932	609	20,086
" 14	7,202	2,023	6,168	3,462	825	19,680
" 21	7,811	1,821	6,524	2,499	2,111	20,766
" 28	6,897	2,006	9,981	2,251	1,069	22,204
April 4	8,408	2,974	5,275	2,384	354	19,395
" 11	6,075	2,075	5,589	2,040	1,079	16,858
" 18	5,597	2,052	4,406	2,492	743	15,290
" 25	6,751	1,676	3,888	1,738	305	14,358
May 2	7,346	1,685	5,118	2,320	880	17,349
" 9	9,219	2,177	5,653	3,066	572	20,687
" 16	10,327	1,956	7,119	2,240	967	22,609
" 23	7,005	2,488	6,702	4,170	331	20,696
" 30	5,280	1,418	5,669	3,404	613	16,384
June 6	5,082	1,204	6,558	2,198	614	15,656
" 13	5,302	1,790	4,248	1,106	525	12,911
" 20	5,048	1,818	5,132	3,103	240	15,341
" 27	6,244	1,914	6,286	2,617	658	17,719
July 4	7,195	2,215	6,861	3,744	889	20,904
" 11	5,953	2,857	6,714	2,859	846	19,229
" 18	5,755	1,776	6,971	3,747	838	19,087
" 25	4,328	2,499	6,683	2,546	1,579	17,635
Aug. 1	4,252	1,928	6,372	2,510	1,973	17,035
" 8	4,998	2,461	4,858	2,874	1,791	16,982
" 15	4,306	4,127	6,199	2,596	1,182	18,410
" 22	3,580	2,448	5,689	2,007	462	14,186
" 29	3,418	2,534	3,733	1,302	457	11,444
Sept. 5	3,604	2,820	2,263	1,489	343	10,519
" 12	3,977	3,366	1,298	997	505	10,143
" 19	4,194	3,745	1,418	898	708	10,963
" 26	4,608	3,649	1,433	1,314	354	11,358
Oct. 3	6,824	3,161	1,657	1,180	440	13,262
" 10	6,752	3,668	1,675	923	764	13,782
" 17	8,227	2,518	2,278	956	685	14,664
" 24	8,016	3,220	3,402	1,325	243	16,206
" 31	7,539	2,506	3,376	2,363	1,124	16,908
Nov. 7	8,678	2,127	4,281	2,050	787	17,923
" 14	10,751	4,186	5,782	2,864	732	24,315
" 21	9,848	3,241	7,679	3,271	690	24,729
" 28	10,226	4,595	11,297	1,831	1,084	29,033
Dec. 5	9,569	6,344	10,715	3,922	835	31,385
" 12	10,162	5,200	14,737	4,141	1,349	35,589
" 19	7,894	3,063	14,839	6,783	2,161	34,740
" 26	2,020	1,647	11,277	4,014	1,044	20,002

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

HOGS—Concluded.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1919						
Week ending:						
Jan. 2	3,186	1,801	2,048	1,234	379	8,648
" 9	9,699	2,397	12,588	5,799	1,364	31,847
" 16	7,581	3,100	17,426	4,038	1,382	33,527
" 23	7,729	1,935	6,407	2,393	452	18,906
" 30	6,232	843	7,072	2,469	685	17,301
Feb. 6	5,652	1,884	9,149	3,030	858	20,573
" 17	5,761	1,831	9,550	3,262	995	21,399
" 20	6,111	2,068	10,027	3,698	1,116	23,020
" 27	8,958	2,105	8,650	2,293	1,023	23,029
Mar. 6	4,493	1,823	4,238	1,576	585	13,015
" 13	4,922	1,609	7,218	3,292	706	17,747
" 20	7,667	1,888	6,723	1,704	934	18,916
" 27	8,857	1,646	5,981	2,558	515	19,557
April 3	5,379	1,808	8,282	1,980	431	17,880
" 10	7,870	2,119	5,283	2,165	726	18,163
" 17	8,336	2,893	5,100	1,001	860	18,190
" 24	7,908	1,421	5,890	1,488	514	17,221
May 1	7,933	2,649	4,703	1,029	425	16,741
" 8	3,923	2,461	4,533	1,330	398	12,645
" 15	5,736	2,308	5,271	1,497	449	15,261
" 22	5,729	2,330	4,243	1,978	614	14,894
" 29	8,652	2,016	1,118	1,298	343	13,427
June 5	4,568	2,572	2,486	1,449	306	11,381
" 12	6,600	2,576	4,069	1,785	759	15,789
" 19	7,674	3,024	4,341	1,484	552	17,075
" 26	9,843	3,567	3,938	1,697	563	19,608
July 3	4,228	4,310	5,164	1,491	637	15,830
" 10	7,297	4,536	7,667	1,075	895	21,470
" 17	6,390	5,657	6,571	1,256	445	20,619
" 24	6,342	6,114	5,856	1,363	278	19,953
" 31	6,976	4,404	4,640	1,368	353	17,741
Aug. 7	4,949	4,360	3,640	1,204	614	14,767
" 14	7,453	5,697	2,718	322	522	16,712
" 21	6,623	2,974	3,033	905	233	13,768
" 28	6,082	2,137	1,106	653	285	10,263
Sept. 4	7,469	2,284	1,406	502	112	11,773
" 11	7,767	2,430	1,067	273	151	11,688
" 18	8,403	2,339	979	436	48	12,205
" 25	6,831	2,752	1,032	452	186	11,253
Oct. 2	6,375	2,367	1,133	584	149	10,608
" 9	6,872	3,179	2,025	564	53	12,693
" 16	6,145	3,724	1,921	184	131	12,105
" 23	8,857	4,688	3,066	484	111	17,206
" 30	15,076	3,626	4,052	502	208	23,464
Nov. 6	9,210	3,519	2,442	236	161	15,577
" 13	8,647	3,612	3,002	396	278	15,935
" 20	9,946	3,831	3,456	614	331	18,208
" 27	10,239	3,817	6,669	1,351	364	22,440
Dec. 4	10,224	2,576	5,548	723	280	19,351
" 11	11,330	2,115	6,300	1,461	770	22,116
" 18	6,549	2,039	5,811	1,180	718	16,297
" 25	3,841	1,339	4,573	758	834	11,347
" 31	3,399	1,370	880	162	147	5,958

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

(Not including Unclassified Animals or Direct Shipments.)

SHEEP AND LAMBS.

	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1917						
Week ending:						
Jan. 4	1,747	1,347	38	85	–	3,217
" 11	1,464	3,006	82	271	–	4,823
" 18	1,727	3,319	1	148	–	5,195
" 25	1,089	936	51	414	–	2,490
Feb. 1	1,001	268	123	–	–	1,392
" 8	578	253	13	343	–	1,187
" 15	732	204	100	–	–	1,036
" 22	328	268	2	529	–	1,127
Mar. 1	374	71	9	270	–	724
" 8	623	142	10	81	–	856
" 15	295	149	14	1,035	–	1,493
" 22	152	113	70	220	–	555
" 29	208	69	3	–	–	280
April 5	253	77	4	31	–	365
" 12	160	51	7	–	–	218
" 19	278	113	6	270	–	667
" 26	89	106	5	42	–	242
May 3	201	142	40	–	–	383
" 10	178	142	3	175	–	498
" 17	376	289	2	–	83	750
" 24	225	228	27	4	–	484
" 31	452	432	12	95	27	1,018
June 7	367	601	25	24	–	1,017
" 14	457	529	39	122	–	1,147
" 21	537	318	46	376	–	1,277
" 28	1,413	321	82	39	2	1,857
July 5	923	637	232	8	–	1,800
" 12	1,148	1,177	89	250	1	2,665
" 19	2,181	865	155	97	–	3,298
" 26	2,326	1,262	43	–	7	3,638
Aug. 2	1,008	1,405	179	1,176	–	3,768
" 9	2,238	2,234	440	310	10	5,232
" 16	3,623	3,374	566	167	20	7,750
" 23	3,569	2,859	348	165	89	7,030
" 30	4,513	4,691	1,235	108	3	10,550
Sept. 6	5,102	6,256	1,153	25	47	12,583
" 13	7,105	9,268	764	46	95	17,278
" 20	13,546	9,019	1,620	1,218	62	25,465
" 27	8,617	10,485	1,361	466	118	21,047
Oct. 4	8,479	6,649	1,875	351	36	17,390
" 11	8,123	3,896	1,082	432	105	13,638
" 18	7,646	4,383	1,162	407	552	14,350
" 25	8,500	7,570	1,635	621	804	19,190
Nov. 1	7,080	6,837	1,164	2,677	299	18,057
" 8	8,787	5,421	983	1,850	305	17,346
" 15	8,245	3,804	1,136	2,378	63	15,626
" 22	8,810	4,651	412	279	139	14,291
" 29	11,340	4,218	864	1,540	181	18,143
Dec. 6	5,014	3,584	560	443	37	9,668
" 13	4,484	1,809	309	171	–	6,773
" 20	2,035	1,448	232	533	49	4,297
" 27	826	1,377	222	51	6	2,482

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Continued.

[Not including Unclassified Animals or Direct Shipments.]

SHEEP AND LAMBS—Continued.

	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1918						
Week ending:						
Jan. 3	1,253	1,325	169	213	–	2,960
" 10	2,813	2,441	92	103	6	5,455
" 17	470	2,708	47	–	6	3,231
" 24	1,465	2,138	5	684	–	4,292
" 31	391	1,181	35	110	–	1,717
Feb. 7	774	410	22	77	2	1,285
" 14	848	146	19	100	–	1,113
" 21	565	206	6	104	17	898
" 28	424	100	4	40	–	568
Mar. 7	511	187	–	498	–	1,196
" 14	425	78	33	172	–	708
" 21	367	41	23	158	–	589
" 28	211	111	107	267	–	686
April 4	185	32	53	92	–	362
" 11	178	49	5	135	57	424
" 18	76	53	8	100	–	237
" 25	78	44	8	–	–	130
May 2	125	79	–	834	–	1,038
" 9	182	176	22	277	52	709
" 16	230	112	55	–	51	448
" 23	169	163	32	5	–	369
" 30	398	342	56	–	–	796
June 6	528	352	64	–	16	960
" 13	1,404	737	252	475	17	2,885
" 20	1,913	896	195	349	45	3,398
" 27	1,236	1,424	137	500	50	3,347
July 4	1,045	1,246	327	73	445	3,136
" 11	1,550	1,181	346	1,034	84	4,195
" 18	1,800	1,094	908	1,102	2	4,906
" 25	1,919	2,738	851	1,793	168	7,469
Aug. 1	1,713	2,130	409	730	96	5,078
" 8	3,723	1,870	497	1,959	114	8,163
" 15	1,756	1,825	570	454	192	4,797
" 22	3,625	4,138	1,054	–	28	8,845
" 29	4,883	5,950	1,672	965	94	13,564
Sept. 5	3,456	2,729	760	1,806	180	8,931
" 12	4,933	3,511	540	1,199	98	10,281
" 19	8,612	3,795	1,074	460	96	16,037
" 26	8,295	7,594	856	1,297	48	18,020
Oct. 3	7,827	6,108	2,864	2,006	780	19,594
" 10	7,477	4,688	1,446	5,339	16	18,966
" 17	5,617	3,507	1,282	1,580	503	12,489
" 24	7,473	6,462	5,542	380	460	20,317
" 31	7,661	6,118	2,101	4,564	153	20,597
Nov. 7	8,183	7,340	2,976	1,367	466	20,332
" 14	7,027	12,876	1,648	2,593	136	24,300
" 21	6,787	4,700	1,788	5,269	24	18,568
" 28	12,024	3,670	1,613	3,815	54	21,176
Dec. 5	13,963	6,911	1,438	1,378	227	23,917
" 12	8,217	7,124	540	1,663	103	17,647
" 19	6,015	4,487	888	1,584	49	13,023
" 26	694	1,527	287	1,772	81	4,361

TABLE V (a).—Live Stock Receipts at Principal Markets by Weeks—Concluded.

[Not including Unclassified Animals or Direct Shipments.]

SHEEP AND LAMBS—Concluded.

—	Toronto	Montreal	Winnipeg	Calgary	Edmonton	Total
1919						
Week ending:						
Jan. 2	2,274	1,677	430	–	92	4,473
" 9	5,095	1,078	199	1,417	305	8,094
" 16	5,161	4,345	325	921	193	10,945
" 23	3,033	2,169	243	363	378	6,186
" 30	728	667	179	2,699	1,368	5,641
Feb. 6	1,633	507	122	1,586	1,192	5,040
" 13	2,123	443	75	826	115	3,582
" 20	1,378	328	123	3,908	295	6,032
" 27	1,333	350	70	340	2,749	4,848
Mar. 6	1,113	215	133	44	194	1,699
" 13	856	206	194	2,114	1,947	5,287
" 20	524	109	50	110	269	1,062
" 27	502	99	55	470	14	1,140
April 3	287	156	156	327	14	940
" 10	579	171	356	919	104	2,129
" 17	466	227	2	15	78	788
" 24	247	161	12	111	11	544
May 1	236	292	58	362	–	948
" 8	27	197	13	421	–	658
" 15	194	417	66	3,326	10	4,013
" 22	417	426	247	468	–	1,558
" 29	494	404	51	153	–	1,102
June 5	286	574	42	1,117	–	2,019
" 12	1,296	656	135	196	1	2,284
" 19	810	1,405	153	333	–	2,701
" 26	1,115	768	204	587	2	2,676
July 3	1,585	1,047	302	524	321	3,779
" 10	2,207	2,237	594	1,417	1,227	7,682
" 17	2,534	3,022	799	1,041	345	7,741
" 24	3,449	2,441	497	630	116	7,133
" 31	4,766	2,771	987	713	502	9,739
Aug. 7	3,037	3,780	807	231	149	8,004
" 14	5,424	6,013	314	513	160	12,424
" 21	7,494	5,909	1,623	528	247	15,801
" 28	8,736	5,411	1,228	734	191	16,300
Sept. 4	6,998	7,401	1,006	436	113	15,954
" 11	10,034	4,931	1,567	1,075	294	17,901
" 18	14,733	6,463	3,950	1,044	335	26,525
" 25	12,082	12,361	2,022	957	322	27,744
Oct. 2	13,620	11,806	2,404	2,020	316	30,166
" 9	15,585	15,193	3,275	1,069	879	36,011
" 16	14,703	15,828	1,857	1,984	278	34,750
" 23	17,401	12,957	2,714	905	885	34,862
" 30	18,156	7,237	6,061	1,556	303	33,313
Nov. 6	17,823	5,993	4,062	1,569	179	29,626
" 13	14,936	8,515	2,926	757	210	27,344
" 20	16,625	5,789	2,273	1,072	619	26,384
" 27	13,572	4,996	2,504	1,457	69	22,598
Dec. 4	8,965	3,178	1,672	707	299	14,821
" 11	11,059	2,616	1,094	1,322	520	16,611
" 18	4,805	2,321	2,073	1,278	496	10,973
" 25	1,868	2,940	564	602	470	6,444
" 31	987	3,284	249	1,410	160	6,090

TABLE V (b). — Receipts and Disposition of Live Stock at Principal Markets.

	Steers (heavy)	Steers (1,000-1,200)	Steers (700-1,000)	Steers (Total)	Heifers	Cows	Bulls	Canners and Cutters	Oxen	Stockers	Feeders	Butchers	Cattle Unclassified	Cattle Shipped Direct	Cattle (Total)	Calves	Hogs	Sheep and Lambs
1917																		
Toronto—																		
Receipts (Total)	7,818	31,959	63,185	102,962	41,988	70,740	10,101	17,681	559	27,762	16,401	–	5,843	237	294,040	46,699	504,443	166,439
Shipments (Total)	6,577	–	–	6,577	–	3,587	6,175	68	–	28,495	16,748	221,837	–	–	283,487	45,251	487,575	161,700
1. Can. Packing Houses	5,503	–	–	5,503	–	–	6,150	48	–	–	–	192,152	–	–	203,853	23,161	466,982	147,119
2. Local Butchers	6	–	–	6	–	–	–	–	–	–	–	25,582	–	–	25,588	15,066	13,186	23,671
3. Country Points	44	–	–	44	–	3,387	5	–	–	26,358	13,843	1,530	–	–	45,367	2,666	7,342	8,031
4. U.S. Exports	1,024	–	–	1,024	–	–	20	20	–	2,137	2,905	2,573	–	–	8,679	4,358	65	12,879
Montreal (Pt. St. Charles)—																		
Receipts (Total)	432	4,030	10,567	15,029	7,083	8,358	12,199	12,456	300	9	1,764	–	–	–	57,198	54,083	79,939	73,603
Shipments (Total)	334	–	–	334	–	–	11,562	12,788	–	145	153	30,180	–	–	55,162	53,945	79,894	71,114
1. Can. Packing Houses	332	–	–	332	–	–	11,316	12,235	–	–	–	29,544	–	–	53,427	40,142	79,272	46,724
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3. Country Points	2	–	–	2	–	–	108	553	–	145	153	514	–	–	1,475	231	260	508
4. U.S. Exports	–	–	–	–	–	–	138	–	–	–	–	122	–	–	260	13,672	62	23,882
Montreal (East End)																		
Receipts (Total)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	62,848	43,194	49,552	51,823
Shipments (Total)	–	–	–	–	–	–	177	1,143	–	–	–	61,528	–	–	62,848	43,194	49,553	51,823
1. Can. Packing Houses	–	–	–	–	–	–	160	1,142	–	–	–	56,240	–	–	57,548	33,195	48,759	19,983
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3. Country Points	–	–	–	–	–	–	–	1	–	–	–	4,566	–	–	4,567	844	794	4,975
4. U.S. Exports	–	–	–	–	–	–	17	–	–	–	–	716	–	–	733	9,155	–	26,865
Winnipeg—																		
Receipts (Total)	12,746	52,557	33,638	98,941	6,384	49,482	9,200	4,670	10,916	47,541	26,317	–	–	18,602	272,053	12,313	323,325	23,377
Shipments (Total)	40	–	–	40	–	–	61	3	–	48,013	23,277	187,439	–	–	258,833	9,195	263,450	20,676
1. Can. Packing Houses	21	–	–	21	–	–	1	2	–	–	–	124,134	–	–	124,156	3,400	235,576	9,093
2. Local Butchers	–	–	–	–	–	–	4	–	–	–	57	29,602	–	–	29,663	4,464	14,542	5,732
3. Country Points	–	–	–	–	–	–	56	1	–	37,005	11,959	3,344	–	–	52,365	1,109	8,140	3,730
4. U.S. Exports	19	–	–	19	–	–	–	–	–	11,008	11,261	30,359	–	–	52,647	222	5,192	2,121
Calgary—																		
Receipts (Total)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	80,786	1,960	118,978	20,344
Shipments (Total)	959	–	–	959	–	–	317	74	–	39,558	371	26,992	–	–	78,271	410	113,455	25,098
1. Can. Packing Houses	346	–	–	346	–	–	2	–	–	150	–	20,344	–	–	20,842	–	101,220	12,024
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3. Country Points	–	–	–	–	–	–	315	–	–	39,408	371	3,067	–	–	45,161	410	11,861	13,074
4. U.S. Exports	613	–	–	613	–	–	–	74	–	–	–	3,581	–	–	4,268	–	374	–
Edmonton—																		
Receipts (Total)	181	3,930	4,022	8,133	2,241	3,874	386	8	360	10,788	110	–	–	–	25,906	3,274	16,562	3,200
Shipments (Total)	162	–	–	162	–	–	251	248	–	12,757	496	10,507	–	–	24,421	2,151	15,024	2,685
1. Can. Packing Houses	135	–	–	135	–	–	193	8	–	–	–	7,827	–	–	8,163	281	12,701	1,204
2. Local Butchers	7	–	–	7	–	–	13	–	–	5	–	438	–	–	463	316	325	164
3. Country Points	20	–	–	20	–	–	41	240	–	12,749	496	1,843	–	–	15,380	1,346	1,886	1,317
4. U.S. Exports	–	–	–	–	–	–	4	–	–	–	–	399	–	–	415	208	112	–

NOTE:—(1) Calves often are shipped as cattle.
(2) 1% to 5% of total receipts are ungraded.

TABLE V (b).—Receipts and Disposition of Live Stock at Principal Markets.

	Steers (heavy)	Steers (1,000-1,200)	Steers (700-1,000)	Steers (Total)	Heifers	Cows	Bulls	Canners and Cutters	Oxen	Stockers	Feeders	Butchers	Cattle Unclassified	Cattle Shipped Direct	Cattle (Total)	Calves	Hogs	Sheep and Lambs
1918																		
Toronto—																		
Receipts (Total)	7,188	26,061	73,547	106,796	48,446	61,018	10,723	28,408	68	26,958	15,784	–	1,426	25,312	328,969	55,685	428,778	167,521
Shipments (Total)	6,145	–	–	6,145	–	–	2,346	2,800	–	23,851	23,180	240,571	–	–	209,093	53,561	385,560	156,809
1. Can. Packing Houses	5,830	–	–	5,830	–	–	2,344	–	–	317	128	211,616	–	–	220,235	27,630	360,889	120,777
2. Local Butchers	250	–	–	250	–	–	–	–	–	–	–	19,975	–	–	20,225	20,031	13,304	28,479
3. Country Points	–	–	–	–	–	–	2	2,979	–	20,610	13,786	2,502	–	–	39,879	2,358	2,189	6,365
4. U.S. Exports	65	–	–	65	–	–	–	21	–	2,924	9,266	6,478	–	–	18,754	3,545	178	1,888
Montreal (Pt. St. Charles)—																		
Receipts (Total)	14	3,003	11,973	14,990	8,065	11,079	14,495	12,204	455	–	1,474	–	2,389	798	65,949	63,863	87,117	60,080
Shipments (Total)	–	–	–	–	–	–	14,561	11,104	–	274	–	37,236	–	–	63,175	63,800	80,652	66,555
1. Can. Packing Houses	–	–	–	–	–	–	14,169	10,462	–	157	–	36,246	–	–	61,034	56,196	80,652	49,949
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3. Country Points	–	–	–	–	–	–	392	458	–	9	–	990	–	–	1,849	606	–	917
4. U.S. Exports	–	–	–	–	–	–	–	184	–	108	–	–	–	–	292	6,998	–	15,689
Montreal (East End)—																		
Receipts (Total)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	66,875	49,443	55,825	64,034
Shipments (Total)	–	–	–	–	–	–	–	–	–	–	–	66,875	–	–	66,875	49,443	55,825	64,034
1. Can. Packing Houses	–	–	–	–	–	–	–	–	–	–	–	59,764	–	–	59,764	39,855	51,794	37,719
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3. Country Points	–	–	–	–	–	–	–	–	–	–	–	5,200	–	–	5,200	3,571	3,881	4,287
4. U.S. Exports	–	–	–	–	–	–	–	–	–	–	–	1,821	–	–	1,821	5,987	150	22,028
Winnipeg—																		
Receipts (Total)	6,300	47,430	25,501	79,231	12,357	56,869	8,822	10,047	5,895	60,631	39,589	–	–	23,081	296,522	12,435	362,629	38,653
Shipments (Total)	743	–	–	743	–	–	969	10,015	1,246	40,289	58,413	169,102	–	–	280,777	9,870	315,268	34,097
1. Can. Packing Houses	127	–	–	127	–	–	–	37	–	86	52	128,914	–	–	129,216	4,961	284,045	18,620
2. Local Butchers	–	–	–	–	–	–	–	36	–	155	–	22,435	–	–	22,626	2,704	15,514	8,905
3. Country Points	–	–	–	–	–	–	55	–	–	36,949	18,579	741	–	–	56,324	747	12,333	4,663
4. U.S. Exports	616	–	–	616	–	–	914	9,942	1,246	3,099	39,782	17,012	–	–	72,611	1,458	3,376	1,903
Calgary—																		
Receipts (Total)	7,551	25,849	3,114	36,514	1,568	21,495	1,944	6,406	27	61,090	4,208	–	–	–	133,252	6,130	139,010	51,394
Shipments (Total)	524	–	–	524	–	–	358	17	–	72,511	1	59,924	–	–	133,335	602	111,397	47,853
1. Can. Packing Houses	357	–	–	357	–	–	–	–	–	694	–	47,264	–	–	48,315	–	99,208	8,943
2. Local Butchers	167	–	–	167	–	–	31	17	–	–	–	384	–	–	599	563	489	143
3. Country Points	–	–	–	–	–	–	287	–	–	71,490	1	1,913	–	–	73,691	39	10,973	38,448
4. U.S. Exports	–	–	–	–	–	–	40	–	–	327	–	10,363	–	–	10,730	–	1,627	319
Edmonton—																		
Receipts (Total)	–	–	–	–	–	–	–	–	–	–	–	–	319	–	45,723	5,449	44,897	5,309
Shipments (Total)	–	–	–	–	–	–	525	13	–	34,518	–	10,763	–	–	45,819	3,186	41,230	4,809
1. Can. Packing Houses	–	–	–	–	–	–	143	13	–	124	–	8,181	–	–	8,461	341	31,957	557
2. Local Butchers	–	–	–	–	–	–	–	–	–	14	–	82	–	–	96	51	216	64
3. Country Points	–	–	–	–	–	–	364	–	–	32,684	–	2,237	–	–	35,285	2,658	8,551	3,802
4. U.S. Exports	–	–	–	–	–	–	18	–	–	1,696	–	263	–	–	–	136	506	386

NOTE:—(1) Calves often are shipped as cattle.
(2) 1% to 5% of total receipts are ungraded.

1919																		
Toronto—																		
Receipts (Total)	7,791	33,308	90,217	–	70,143	70,524	11,943	31,462	172	35,711	13,588	–	6,924	20,409	392,192	66,781	471,090	295,135
Shipments (Total)	434	–	–	–	–	–	354	4,021	–	23,339	27,066	308,499	–	–	364,253	65,056	453,161	284,670
1. Can. Packing Houses	–	–	–	–	–	–	–	–	–	–	–	235,107	–	–	235,107	24,195	434,726	221,683
2. Local Butchers	–	–	–	–	–	–	–	–	–	128	45	23,084	–	–	23,257	24,787	13,939	51,145
3. Country Points	374	–	–	–	–	–	43	3,251	–	15,293	14,203	5,846	–	–	39,010	1,479	4,142	6,051
4. U.S. Exports	60	–	–	–	–	–	311	770	–	7,918	13,358	44,462	–	–	66,879	14,595	354	5,791
Montreal (Pt. St. Charles)—																		
Receipts (Total)	39	2,510	12,670	–	9,201	10,994	17,761	13,105	541	20	1,386	–	–	489	70,706	72,852	91,631	108,894
Shipments (Total)	–	–	–	–	–	–	15,579	11,552	–	3	–	40,979	–	–	68,113	72,165	83,613	105,561
1. Can. Packing Houses	–	–	–	–	–	–	15,579	10,157	–	–	–	37,919	–	–	63,655	65,491	83,501	69,262
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3. Country Points	–	–	–	–	–	–	–	1,229	–	3	–	2,709	–	–	3,941	168	112	1,205
4. U.S. Exports	–	–	–	–	–	–	–	166	–	–	–	351	–	–	517	6,493	–	35,094
Montreal (East End)—																		
Receipts (Total)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	75,829	57,759	61,222	76,066
Shipments (Total)	–	–	–	–	–	–	–	31	–	–	–	75,898	–	–	75,929	57,656	61,222	76,066
1. Can. Packing Houses	–	–	–	–	–	–	–	–	–	–	–	65,879	–	–	65,879	51,210	49,282	53,564
2. Local Butchers	–	–	–	–	–	–	–	–	–	–	–	22	–	–	22	–	96	–
3. Country Points	–	–	–	–	–	–	–	31	–	–	–	5,671	–	–	6,702	1,335	11,634	1,534
4. U.S. Exports	–	–	–	–	–	–	–	–	–	–	–	3,326	–	–	3,326	5,111	210	20,966
Winnipeg—																		
Receipts (Total)	8,958	36,694	10,999	–	27,429	68,567	7,629	22,597	4,205	42,297	85,449	–	–	39,087	343,911	24,869	273,514	53,725
Shipments (Total)	277	–	–	–	–	–	993	1,677	–	46,850	92,262	166,603	–	–	308,662	20,644	259,962	51,577
1. Can. Packing Houses	–	–	–	–	–	–	164	–	–	–	–	111,848	–	–	112,012	10,867	229,165	28,950
2. Local Butchers	–	–	–	–	–	–	1	–	–	–	–	15,948	–	–	15,949	6,172	14,371	10,743
3. Country Points	92	–	–	–	–	–	223	–	–	25,397	7,773	10,036	–	–	43,521	937	15,839	10,049
4. U.S. Exports	185	–	–	–	–	–	605	1,677	–	21,453	84,489	28,771	–	–	137,180	2,668	587	1,835
Calgary—																		
Receipts (Total)	5,475	21,530	7,902	–	8,114	33,485	2,401	17,293	57	57,535	15,885	–	–	23,880	193,557	20,664	78,654	54,654
Shipments (Total)	–	–	–	–	–	–	1	–	–	82,000	–	125,364	–	–	207,365	–	78,241	51,842
1. Can. Packing Houses	–	–	–	–	–	–	–	–	–	285	–	77,298	–	–	77,583	–	72,532	12,494
2. Local Butchers	–	–	–	–	–	–	–	–	–	322	–	6,987	–	–	7,309	–	847	3,217
3. Country Points	–	–	–	–	–	–	1	–	–	81,393	–	–	–	–	81,394	–	4,862	36,131
4. U.S. Exports	–	–	–	–	–	–	–	–	–	–	–	41,079	–	–	41,079	–	–	–
Edmonton—																		
Receipts (Total)	458	6,969	7,520	–	10,868	13,695	889	2,571	183	10,517	2,099	–	–	9,871	71,631	8,302	26,875	20,254
Shipments (Total)	531	–	–	–	–	–	559	553	–	48,783	4,516	17,038	–	–	71,980	6,529	27,007	19,477
1. Can. Packing Houses	491	–	–	–	–	–	2,033	530	–	517	–	11,726	–	–	13,467	2,480	21,379	2,662
2. Local Butchers	–	–	–	–	–	–	3	–	–	2,197	–	958	–	–	3,158	711	1,265	2,151
3. Country Points	40	–	–	–	–	–	313	–	–	42,288	793	765	–	–	44,199	2,899	3,857	14,441
4. U.S. Exports	–	–	–	–	–	–	0	23	–	3,781	3,723	3,589	–	–	11,156	439	526	2.3

NOTE.—(1) Calves often are shipped as cattle.

(2) 1% to 5% of total receipts are ungrade 1.

TABLE VI.—Origin of Live Stock Marketed by Provinces and Districts.

	1917			1918			1919		
	Cattle	Calves	Sheep	Cattle	Calves	Sheep	Cattle	Calves	Sheep
QUEBEC.									
Arthabasca	2,024	794	4,092	4,515	2,065	4,767	4,885	2,933	5,660
Argenteuil	530	284	1,427	1,044	560	769	1,752	782	2,500
Beauce	539	274	6,119	1,432	965	7,169	3,408	1,940	10,498
Bagot	756	2,434	1,438	2,267	3,117	4,685	2,749	3,536	4,690
Brome	775	2,749	775	1,816	3,648	1,132	910	3,834	1,095
Bellechasse	3,689	367	667	1,249	184	329	1,000	424	813
Bonaventure	284	151	2,126	76	140	1,140	2	153	2,134
Beauharnois	27	–	143	82	–	–	389	122	186
Berthier	415	648	1,024	722	1,005	1,405	1,161	2,084	2,783
Chambly	6	–	–	29	–	–	26	13	2
Chateauguay	1,179	1,942	496	1,723	2,757	461	2,156	2,838	652
Champlain	231	139	585	488	356	715	649	860	1,876
Chicoutimi	79	4	–	31	–	–	228	340	958
Compton	2,736	1,259	3,179	4,554	526	4,574	4,425	1,805	4,451
Charlevoix	–	–	–	–	–	–	32	–	–
Dorchester	231	51	851	257	197	1,739	968	982	2,465
Frontenac	676	609	2,947	1,119	1,119	3,589	1,289	2,020	6,174
Drummond	1,886	2,149	3,165	2,873	2,137	3,574	3,922	2,848	4,985
Gaspé	–	–	59	–	–	–	18	21	1
Huntingdon	2,018	4,454	1,196	2,795	5,241	1,158	2,673	5,081	2,025
Hochelaga	–	–	–	74	124	197	302	1,196	436
Iberville	371	438	1,524	469	360	343	316	504	365
Joliette	123	157	1,396	700	1,269	2,650	1,039	1,780	5,054
Jacques Cartier	665	595	669	536	452	80	752	412	206
Kamouraska	418	503	2,574	498	916	2,684	1,222	1,803	5,074
Labelle	2,163	1,568	3,670	2,073	613	3,489	3,812	2,238	5,939
L'Islet	35	1	398	168	3	804	377	920	2,189
Lake St. John	24	24	413	159	166	735	2,260	2,841	7,206
L'Assomption	115	62	236	241	124	606	658	320	765
Lotbinière	327	5	19	378	71	252	844	916	942
Lévis	18	104	316	52	3	–	383	343	350
Laprairie	113	49	96	7	28	4	35	1	–
Megantic	3,478	768	5,244	3,837	1,439	5,368	4,146	3,226	5,063
Missisquoi	1,395	2,998	2,193	1,583	3,067	967	897	1,732	774
Matane	383	414	1,933	448	963	6,062	329	2,644	8,446
Maskinonge	154	91	471	20	8	–	363	180	961
Montcalm	–	–	–	–	–	–	–	4	137
Montmagny	35	90	296	308	583	148	377	701	247
Montmorency	–	–	–	–	–	–	65	154	46
Nicolet	1,413	2,136	2,576	1,675	1,973	1,971	2,372	1,660	3,344
Napierville	517	819	536	582	1,113	974	1,160	1,698	1,725
Pontiac	3,878	2,620	3,530	5,348	1,749	3,868	6,358	3,371	5,191
Portneuf	403	482	1,243	511	448	808	1,117	1,266	1,323
Quebec	110	–	696	217	183	694	161	259	234
Rouville	342	617	5,025	430	617	552	484	901	917
Richmond	3,761	1,981	1,433	4,642	2,634	2,551	4,441	4,084	3,459
Richelieu	260	79	1,315	58	58	7	229	176	378
Rimouski	1,146	2,185	9,564	672	2,439	9,470	720	3,294	13,254
Saguenay	–	–	–	–	–	–	–	–	–
St. John	539	1,162	707	803	1,085	767	1,258	1,746	1,374
Shefford	1,475	3,239	2,041	2,029	2,858	2,210	1,964	3,764	2,623
Stanstead	1,932	1,830	699	2,138	3,597	2,085	1,399	1,769	1,028
St. Hyacinthe	224	514	961	722	927	431	1,081	494	511
Soulanges	419	306	1,111	1,083	1,698	1,146	1,539	2,261	1,669
Sherbrooke	894	743	922	1,333	292	1,239	1,614	1,015	939
St. Maurice	32	48	213	13	12	42	156	884	53
Two Mountains	374	74	41	570	2	59	1,324	123	170
Temiscounta	950	1,189	5,116	590	1,589	6,566	902	2,244	9,675
Terrebonne	541	354	2,686	441	246	879	746	352	1,136
Timiskaming	–	–	–	–	–	–	35	–	–
Vaudreuil	171	28	141	250	27	33	424	64	515
Verchères	62	–	72	71	60	157	158	42	348
Wolfe	1,222	574	3,012	1,829	602	2,007	1,657	1,051	2,890
Wright	2,539	1,873	2,231	4,183	332	3,069	6,237	1,289	6,510
Yamaska	419	307	982	864	791	941	1,686	923	2,198
Total	51,350	49,335	98,590	69,677	59,338	104,404	90,041	89,261	159,612
ONTARIO									
Algoma	2,488	91	6,957	3,009	24	6,731	5,641	378	15,158
Brant	1,898	563	931	1,918	619	723	2,855	612	1,678
Bruce	17,751	251	10,643	17,516	797	7,233	23,314	639	16,646
Carleton	9,203	1,197	3,707	8,421	1,055	1,607	10,415	1,498	2,538
Dufferin	8,167	389	5,520	9,669	427	6,339	9,985	550	10,768
Dundas	1,692	4,107	380	1,425	4,078	173	1,186	2,376	770
Durham	7,890	2,155	4,606	9,125	2,932	4,257	7,980	2,510	8,243
Elgin	4,668	1,898	2,615	3,888	2,732	2,928	3,991	1,540	4,087
Essex	2,419	280	1,578	1,105	74	1,036	1,500	665	6,932
Frontenac	6,185	726	2,589	8,703	854	2,059	7,709	1,460	3,237
Glengarry	5,565	10,640	2,281	3,199	11,386	2,008	1,934	2,719	2,327

TABLE VI.—Origin of Live Stock Marketed by Provinces and Districts—Continued.

	1917			1918			1919		
	Cattle	Calves	Sheep	Cattle	Calves	Sheep	Cattle	Calves	Sheep
ONTARIO—Continued.									
Grenville	2,832	4,741	2,876	2,435	5,161	1,083	1,801	3,146	1,180
Grey	20,003	600	17,731	21,421	710	17,587	26,466	1,565	29,609
Haldimand	3,967	588	1,618	2,532	533	830	2,616	228	1,884
Haliburton	–	–	–	953	79	1,019	1,574	297	–
Halton	6,613	973	2,796	7,002	1,120	2,957	8,591	1,601	6,379
Hastings	12,667	9,832	9,143	13,603	9,803	7,832	11,752	8,377	10,351
Huron	17,692	512	5,539	17,224	504	4,947	17,608	612	9,796
Kent	11,276	546	4,008	8,890	411	3,994	7,958	433	10,371
Lambton	7,366	182	2,693	8,398	362	4,046	6,200	247	6,075
Lanark	10,691	3,183	9,324	12,367	5,611	9,261	13,506	3,076	10,739
Leeds	5,587	6,679	2,894	5,477	7,542	7,138	4,889	7,148	3,993
Lennox and Addington	5,705	2,361	1,459	5,549	2,590	1,346	6,624	2,768	1,963
Lincoln	788	30	54	600	63	60	1,438	92	143
Middlesex	10,421	616	1,688	8,683	472	2,662	10,491	558	5,591
Muskoka	1,418	131	1,756	1,154	65	1,821	2,435	226	2,655
Nipissing	1,414	205	2,348	2,148	447	3,953	3,824	1,050	5,308
Norfolk	1,925	1,649	999	1,912	1,296	784	954	584	1,053
Northumberland	6,485	2,382	1,991	6,612	2,827	2,073	5,907	2,944	4,130
Ontario	8,971	471	2,137	10,401	546	1,816	12,900	786	6,389
Oxford	9,831	9,452	1,841	9,898	9,726	1,222	11,389	7,746	2,458
Parry Sound	2,120	95	6,007	3,127	177	6,556	4,979	724	10,746
Peel	9,273	1,909	4,813	9,663	2,557	4,198	9,636	2,858	6,367
Perth	11,817	1,346	2,698	12,222	1,277	1,978	14,520	2,070	4,211
Peterborough	7,273	1,470	2,232	6,395	1,878	1,754	8,901	2,145	3,501
Prescott	516	896	318	2,241	1,483	497	2,228	842	2,385
Prince Edward	2,578	1,931	1,415	3,342	4,880	1,417	2,482	2,540	1,704
Rainy River	631	28	92	–	–	–	106	12	–
Renfrew	9,338	576	5,272	10,702	2,625	7,956	14,637	2,360	7,357
Russell	2,761	848	593	1,762	2,456	3,066	1,948	536	706
Simcoe	16,770	1,367	12,849	18,408	1,644	11,313	23,140	2,299	25,573
Stormont	1,919	6,617	520	1,482	7,530	789	1,548	6,243	2,380
Temiskaming	–	–	–	28	–	–	277	19	98
Thunder Bay	46	6	–	17	–	–	80	6	10
Victoria	9,346	556	6,964	9,222	697	4,768	13,315	1,208	9,733
Waterloo	8,636	147	1,056	10,147	576	1,214	10,988	733	2,442
Welland	759	27	52	522	38	790	826	50	251
Wellington	15,640	803	7,752	20,150	722	9,350	23,821	1,062	18,330
Wentworth	803	79	127	1,010	157	56	1,591	336	386
York	14,217	3,044	7,125	14,792	3,324	5,689	15,722	3,626	9,805
Total	328,021	89,175	174,587	340,469	106,867	172,913	386,168	88,130	298,526

TABLE VI.—Origin of Live Stock Marketed by Provinces and Districts.—Continued.

	1917			1918			1919		
	Cattle	Calves	Sheep	Cattle	Calves	Sheep	Cattle	Calves	Sheep
MANITOBA									
District 201	279	8	3	247	23	16	444	7	142
202	650	45	146	371	19	173	400	9	226
203	–	61	–	–	–	–	120	2	–
204	1 232	265	322	952	15	272	1,351	22	810
205	2,872	112	573	1,843	185	1,018	2,255	230	3,547
206	1,396	965	345	1,214	91	371	1,502	157	720
207	10,861	319	1,260	9,987	613	1,712	8,484	530	2,294
208	5,950	279	789	6,993	268	894	7,534	325	2,400
209	3,480	279	297	4,850	291	1,613	4,151	409	1,192
210	806	67	355	965	74	206	1,102	153	555
211	3,330	740	1,489	2,453	550	1,870	3,001	848	2,192
212	3,394	331	812	2,753	150	1,144	4,085	625	3,295
213	4,500	436	504	5,841	522	932	6,428	540	1,518
214	5,033	197	518	5,577	142	302	9,539	395	770
215	2,878	302	728	3,878	310	994	3,301	383	571
216	4,662	312	658	4,268	300	721	3,851	404	1,404
217	4,580	432	683	4,019	267	1,343	4,820	534	3,221
218	2,823	240	605	2,547	104	619	2,298	85	1,291
219	3,474	279	710	2,639	201	845	2,477	168	1,298
220	3,280	300	856	2,577	170	1,388	2,615	322	1,811
221	4,635	556	454	4,490	449	677	4,157	506	722
222	3,085	268	251	3,369	184	283	4,359	468	870
223	2,369	85	276	1,554	58	215	2,253	141	291
224	1,822	45	58	1,783	40	8	2,843	170	253
225	5,939	313	504	5,298	171	310	5,460	393	264
226	5,270	368	265	4,643	300	364	4,280	280	247
227	4,845	304	550	5,547	286	1,078	4,183	322	1,977
228	2,440	209	560	1,948	145	470	1,898	197	723
229	2,200	162	252	1,673	103	541	1,645	124	287
Total	98,085	8,309	15,153	93,288	6,031	20,379	100,837	8,749	34,891

Key to District Numbers—Manitoba.

District	Area
201	Range 10 to 17, townships 1–7 E. Principal Meridian.
202	" 10 to 17, " 8–12 "
203	" 10 to 17, " 13–19 "
204	" 6 to 9, " 1–6 "
205	Red River to Range 5 townships 1–6 E. Principal Meridian.
206	" " 9 " 7–9 "
207	Range 4 and Red River, to Range 9, township 10 to Lake Winnipeg, E. Principal Meridian.
208	Range 2 west of P.M. to 5 E.P.M. and Red River, townships 12 to 25.
209	Range 5 W.P.M. to Red River, townships 8–14.
210	" 2 " " " 5–7.
211	" 7 " " " 1–4.
212	" 3 W.P.M. to 7, townships 5–10.
213	Lake Manitoba to Range 3 W. P.M. townships 15–32.
214	Range 10–23 W.P.M. townships 24–32.
215	Lake Manitoba to Range 17 W.P.M. townships 16–23.
216	Range 6–12 W.P.M. Assiniboine R. to township No. 15.
217	" 8–12 " townships 1 to Assiniboine R.
218	" 13–18 " " 1–4.
219	" 13–18 " " 5–8.
220	" 13–23 " " 9–12.
221	" 13–23 " " 13–15.
222	" 17–23 " " 16–24.
223	" 19–29 " " 34–44.
224	" 24–29 " " 24–33.
225	" 24–29 " " 16–23.
226	" 24–29 " " 9–15.
227	" 19–29 " " 5–8.
228	" 19–26 " " 1–4.
229	" 26–29 " " 1–6.

TABLE VI.—Origin of Live Stock Marketed by Provinces and Districts—Concluded.

		1917			1918			1919		
		Cattle	Calves	Sheep	Cattle	Calves	Sheep	Cattle	Calves	Sheep
	ALBERTA.									
District	1				1,930	82	4,222	2,584	134	1,648
	2				5,635	343	6,309	5,349	851	3,457
	3				2,801	58	1,082	8,566	1,540	4,170
	4				4,879	205	1,234	9,829	2,151	6,079
	5				2,001	80	1,046	6,740	701	1,750
	6				1,095	366	2,498	1,549	83	3,494
	7				1,460	67	1,562	2,449	293	9,649
	8				5,377	43	3,034	5,437	357	2,050
	9				2,589	47	1,642	3,328	569	829
	10				1,085	40	–	4,881	681	–
	11				5,028	187	350	5,375	731	243
	12				5,434	121	2,851	6,147	573	495
	13				8,415	322	949	10,588	1,214	473
	14				6,232	442	5,919	3,357	224	485
	15				2,223	201	803	2,651	590	1,385
	16				2,541	72	215	2,785	187	166
	17				3,246	122	–	3,590	367	176
	18				12,807	1,276	1,066	12,251	1,759	1,290
	19*		Not available.		33,237	1,944	8,580	40,190	3,127	11,181
	20				10,475	764	4,253	28,361	3,448	4,046
	21				5,991	195	557	9,257	1,105	2,260
	22				4,549	268	103	8,382	890	1,521
	23				3,688	60	383	7,774	549	618
	24				6,147	126	1,223	2,253	209	–
	25				3,046	25	33	4,950	134	–
	26				1,396	114	235	5,088	472	101
	27				4,698	382	311	10,989	1,739	1,374
	28				5,861	242	863	6,289	525	1,298
	29				6,893	541	2,057	5,483	241	1,064
	30				4,470	280	993	8,750	736	1,080
	31				1,481	62	281	4,695	500	245
	32				4,420	117	116	10,708	870	1,453
	33				6,153	33	1,064	19,232	2,070	465
	34				2,416	93	186	6,845	657	575
	35*				20,394	1,243	1,173	14,024	1,215	4,278
	36				1,350	54	179	2,232	327	55
	37				2,399	72	30	3,820	266	192
	Total	–	–	–	203,842	10,689	57,428	296,840	32,025	69,845

*NOTE.—Calgary and Edmonton are situated in districts 19 and 35 respectively. Cattle and other animals, brought in to the stock yards, may be kept in pasture pending favourable market conditions. When these animals are marketed, they are shown as originating in these districts although they have been shipped originally from outside points.

Key to District Numbers—Alberta.

District	Area
1	Provincial Boundary to Range 13 west of fourth Meridian, townships 1 to 7.
2	Range 14 to 21 W. of 4th M., townships 1-6.
3	" 22 to 28 W. of 4th M., townships 1-6.
4	" 29 W. of 4th M. to Rocky Mts., townships 1-8.
5	" 25 W. of 4th M. to Rocky Mts., " 7-11.
6	" 19 to 24 west of 4th M. " 7-11.
7	" 11 to 18 west of 4th M., " 7-11.
8	Prov. Bound. to R. 10 W. 4th M., " 8-13.
9	" to R. 10 W. 4th M., " 14-23.
10	Range 11 to 18, 10 W. 4th M., " 12-16.
11	" 19 to 25, 10 W. 4th M., " 12-16.
12	" 26 W. 4th M. to Rocky Mts , " 12-16.
13	" 26 W. 4th M. to Rocky Mts., " 17-20.
14	" 19-25 W. of 4th M., " 17-23.
15	" 11-18 W. of 4th M., " 17-23.
16	Prov. Bound. to Range 10 W. of 4th M., " 24-30.
17	Range 11-18 W. of 4th M., " 24-32.
18	" 19-35 W. of 4th M., " 24-32.
19	" 26 W. 4th M. to Rocky Mts., " 21-26.
20	" 26 W. 4th M. to Rocky Mts., " 27-32.
21	" 26 W. 4th M. to Rocky Mts., " 33-35.
22	" 19-25 W. of 4th M., " 33-38.
23	" 11-18 W. of 4th M., " 33-38.
24	Prov. Bound. to Range 10 W. 4th M., " 31-36.
25	" to Range 10 W. 4th M., " 37-42.
26	Range 10-15 W. 4th M., " 39-44.
27	" 16-23 W. 4th M., " 39-44.
28	" 24 W. 4th M. to Rocky Mts., " 39-44.
29	" 24 W. 4th M. to Rocky Mts., " 45-49.
30	" 16-23 W. 4th M., " 45-49.
31	" 10-15 W. 4th M., " 45-49.
32	Prov. Bound. to Range 9 W. of 4th M., " 43-47.
33	" to Range 9 W. of 4th M., " 48-62.
34	Range 11-19 W. of 4th M., " 50-62.
35	" 19 E. to 1 W. of 5th M., " 50-60.
36	" 1 W. of 5th M. to Rocky Mts., " 50-60.
37	Peace River and Grand Prairie Districts.

TABLE VI.—Origin of Live Stock Marketed by Provinces and Districts—Continued.

	1917			1918			1919		
	Cattle.	Calves	Sheep.	Cattle	Calves	Sheep	Cattle	Calves.	Sheep
SASKATCHEWAN.									
District 101	3,913	182	1,055	4,483	260	488	2,824	210	505
102	5,088	189	113	6,862	379	510	5,979	622	1,296
103	3,277	89	262	3,470	103	136	3,562	120	202
104	4,606	178	100	4,807	197	279	4,883	300	334
105	9,527	250	208	9,263	233	589	9,748	405	63
106	7,174	119	491	6,760	145	476	6,240	156	805
107	11,911	217	241	9,380	157	84	11,110	221	568
108	–	–	–	16	–	–	23	3	–
109	7,655	181	635	4,935	146	370	6,145	428	824
110	1,381	8	6	1,134	28	7	1,698	–	103
111	2,055	97	19	2,287	95	236	3,715	224	550
112	7,358	183	234	9,439	268	711	10,180	690	1,358
113	4,055	74	–	4,956	134	60	5,512	238	313
114	1,739	85	44	1,857	80	126	2,318	160	104
115	3,045	245	500	4,298	352	184	3,940	410	171
116	3,155	132	–	3,113	214	370	2,768	439	440
117	2,681	183	230	2,907	129	175	2,828	206	354
118	2,401	61	18	3,915	134	84	2,409	146	1,065
119	408	36	53	1,060	107	–	1,713	122	–
120	2,883	116	237	2,990	109	61	3,126	313	738
121	1,671	194	–	1,228	119	–	1,738	222	218
122	1,054	83	28	1,880	127	178	2,400	161	1,214
123	2,361	85	76	2,894	98	139	3,129	291	113
124	4,476	132	264	4,598	106	619	4,240	189	365
125	2,460	48	46	2,162	51	–	3,706	57	145
126	1,023	26	–	696	49	115	1,424	123	78
127	5,390	91	40	3,735	105	20	6,660	384	276
128	5,275	44	26	5,152	48	9	8,950	229	494
129	3,968	15	189	6,028	38	79	9,049	469	606
130	538	6	175	908	89	–	1,570	180	205
131	3,852	76	91	5,804	196	659	8,522	641	427
132	2,773	54	54	2,759	49	98	3,301	224	59
133	261	5	–	644	28	22	1,043	132	27
134	497	12	–	1,314	51	712	1,404	121	381
135	1,153	21	37	2,461	44	111	2,698	76	270
136	268	6	–	1,319	57	–	1,657	113	237
137	996	32	–	3,231	27	–	4,551	572	174
138	740	2	–	3,167	109	681	2,776	268	–
139	2,219	35	3	4,218	71	716	3,815	919	1,176
140	1,967	26	–	4,068	265	148	6,384	776	637
141	240	1	–	1,157	16	–	1,383	133	–
142	424	13	–	1,101	38	–	1,097	80	–
Total	127,921	3,635	5,475	148,486	5,051	9,252	172,218	11,713	16,895

Key to District Numbers—Saskatchewan.

District	Area
101	Provincial Boundary to Range 9 west of 2nd meridian, townships 1 to 4.
102	Prov. Bound. to R. 9 W. 2 M. townships 5-9.
103	" to R. 2 W. 2 M., township 10 to Qu'Appelle River.
104	Range 3 to 9 W. 2 M., township 10 to Qu'Appelle River.
105	" 3 to 9, W. 2 M., Qu'Appelle River to township 28.
106	Prov. Bound. to R. 2 W. 2 M., Qu'Appelle River to township 28.
107	" Range 9 W. 2 M., townships 24-37.
108	" Range 9 W. 2 M., " 38-49.
109	Range 10-25 W. 2 M. " 43-49.
110	" 10-17 " " 36-42.
111	" 18-23 " " 36-42.
112	" 10-23 " " 30-35.
113	" 10-23 " " 25-30.
114	" 10 to Last Mt. Lake, Qu'Appelle River to township 24.
115	" 10-23 W. 2 M., township 15 to Qu'Appelle River.
116	" 10-23 W. 2 M., townships 7-14.
117	" 10-23 W. 2 M., townships 1-6.
118	" 24 E. to 7 W. of 3rd M., townships 1-9.
119	" 24 E. to 7 W. of 3rd M., townships 10-14.
120	" 24 E. to 7 W. of 3rd M., township 15 to Qu'Appelle and South Saskatchewan Rivers.
121	" 22 E. to R. 4 W. of 3rd M., lying between Qu'Appelle River and Last Mt. Lake and South of township 24.
122	Last Mt. Lake to South Sask. River, townships 25-29.
123	Range 24 E. 3rd M. to S. Sask. River, townships 30-35.
124	" 24 E. 3rd M. to S. Sask. River, townships 36-45 and South Sask. River.
125	Range 24 E. to 4 W. of 3rd M. townships 44-52 North of South townships 38-43.
126	S. Sask. River to Range 7 W. of 3rd M. and North Sask. River, townships 38-43.
127	Range 4-13 W. 3rd M. townships 58, South to the N. Sask. River.
128	" Range 14-27 W. 3rd M. township 58, south to N. Sask. River
129	" 19-27 W. 3rd M., township 45 north to N. Sask. River.
130	" 23-27 W. 3rd M., townships 40-44
131	" 14-22 W. 3rd M., townships 36-44 and N. Sask. River.
132	South Sask. R. to Range 14 W. 3rd M., township 34, N. Sask. River.
133	South Sask. R. to Range 14 W. 3rd M., townships 28-32.
134	Range 15-22 W. 3rd M., townships 28-35.
135	" 23 E. to 4 meridian, townships 31-39
136	" 20 E. to 4 meridian, township 30 South to the S. Sask. River.
137	S. Sask. R. to Range 19 E. 4th M., township 27 south to the South Sask. River.
138	Range 16 E. to 4th Meridian, township 17 north to S. Sask. River.
139	" 16 E. to 4th Meridian, townships 10-16.
140	" 8-15 E. 4th M., township 11 to S. Sask. River.
141	" 8-15 E. 4th Meridian, townships 1 to 10.
142	" 16 E. to 4th Meridian, townships 1-9.

TABLE VII.—Interprovincial and Market Shipments of Live Stock, 1919.

	Cattle	Calves	Sheep	Swine
SHIPMENTS FROM PRINCE EDWARD ISLAND.				
To Ontario—				
Total from all Points	–	–	–	2,264
SHIPMENTS FROM NOVA SCOTIA.				
To Quebec—				
Total from all Points	906	–	–	–
SHIPMENTS FROM NEW BRUNSWICK.				
To Quebec—				
Total from all Points	2,722	747	919	250
SHIPMENTS FROM QUEBEC.				
To Ontario—				
From Montreal	8,973	531	2,918	18,259
From other Points	3,264	312	4,146	29,103
Total	12,237	843	7,064	47,362
To Overseas—				
From Montreal	6	–	–	–
To U.S.A.—				
From Montreal	3,865	11,416	53,221	210
Total Exports	3,871	11,416	53,221	210
Total shipped out of Province	16,108	12,259	60,285	47,572
SHIPMENTS FROM ONTARIO.				
To Nova Scotia—				
From Toronto	173	–	–	–
Total	173	–	–	–
To Quebec—				
From Toronto	6,612	429	424	825
From other Points	42,620	26,663	10,880	16,972
Total	49,232	27,092	11,304	17,797
To Manitoba—				8
From Toronto	18	–	–	–
From other Points	1,109	32	–	–
Total	1,127	32	–	–
To Saskatchewan—				
Total from all Points	161	–	–	–
To Alberta—				
Total from all Points	299	–	–	–
Total to other Provinces	50,992	27,124	11,304	17,797
To Newfoundland—				
Total from all Points	–	–	70	–
To Overseas—				
From Toronto	353	1	–	–
From other Poiats	206	–	–	–
Total	559	1	–	–
To U.S.A.—				
From Toronto	64,590	12,148	4,102	188
From other Points	2,756	–	239	54
Total	67,346	12,148	4,341	242
Total Exports	67,905	12,149	4,411	242
Total shipped out of Province	118,897	39,273	15,715	18,039
SHIPMENTS FROM MANITOBA.				
To Quebec—				
From Winnipeg	1,382	–	466	2,969
Total	1,382	–	466	2,969
To Ontario—				
From Winnipeg	37,208	795	792	25,002
From other Points	396	–	–	–
Total	37,604	795	792	25,002
To Saskatchewan—				
From Winnipeg	9,000	109	1,579	536
From other Points	27	–	–	–
Total	9,027	109	1,579	536

TABLE VII.—Interprovincial and Market Shipments of Live Stock, 1919—Concluded.

SHIPMENTS FROM MANITOBA—Concluded.

	Cattle	Calves	Sheep	Swine
To Alberta—				
From Winnipeg	373	–	–	–
From other Points	255	31	–	27
Total	628	31	–	27
To British Columbia—				
From Winnipeg	24	–	–	–
Total	24	–	–	–
Total to other Provinces	48,665	935	2,837	28,534
To U.S.A.—				
From Winnipeg	136,122	1,923	1,405	587
From other Points	1,483	–	–	–
Total	137,605	1,923	1,405	587
Total Exports	137,605	1,923	1,405	587
Total shipped out of Province	186,270	2,858	4,242	29,121

SHIPMENTS FROM SASKATCHEWAN.

To Quebec—				
Total from all Points	48	–	–	–
To Ontario—				
Total from all Points	1,890	–	–	29
To Manitoba—				
Total from all Points	158,183	9,468	16,068	141,407
To Alberta—				
Total from all Points	1,866	185	1,054	686
To British Columbia—				
Total from all Points	25	–	6	15
Total to other Provinces	162,012	9,653	17,128	142,137
To U.S.A.—				
Total from all Points	9,472	–	–	–
Total Exports	9,472	–	–	–
Total shipped out of Province	171,484	9,653	17,128	142,137

SHIPMENTS FROM ALBERTA.

To Nova Scotia—				
From Calgary	179	–	–	–
To Quebec—				
From Calgary	128	–	–	86
From Edmonton	242	–	–	–
From other Points	110	–	–	86
Total	480	–	–	172
To Ontario—				
From Calgary	3,934	–	–	1,491
From Edmonton	2,041	–	–	3,358
From other Points	2,469	–	220	3,099
Total	8,444	–	220	7,948
To Manitoba—				
From Calgary	1,159	–	386	933
From Edmonton	3,240	485	555	104
From other Points	44,708	4,604	–	2,309
Total	49,107	5,089	941	3,346
To Saskatchewan—				
From Calgary	28,514	2	1,960	22,736
From Edmonton	7,686	855	550	1,176
From other Points	1,722	–	671	–
Total	37,922	857	3,181	23,912
To British Columbia—				
From Calgary	14,534	–	6,692	18,491
From Edmonton	1,118	245	105	2
From other Points	1,291	2	315	2,224
Total	16,943	247	7,112	20,717
Total to other Provinces	113,075	6,193	11,454	56,095
To U.S.A.—				
From Calgary	39,231	–	108	–
From Edmonton	15,366	794	–	36
From other Points	14,974	–	–	134
Total Exports	69,571	794	108	170
Total shipped out of Province	182,646	6,987	11,562	56,265

SHIPMENTS FROM BRITISH COLUMBIA.

To Quebec—				
Total from all Points	40	–	–	–
To Alberta—				
Total from all Points	255	–	–	–
Total to other Provinces	295	–	–	–
Total shipped out of Province	295	–	–	–

TABLE VIII.—Live Stock slaughtered at Canadian Inspected Establishments by Fiscal Years, 1912-13 to 1919-20.

CATTLE, 1912-13.

Month	Ontario	Quebec	Manitoba	Saskatchewan Alberta and British Columbia	Maritime and Prince Edward Island	Total
April, 1912	15,539	9,630	2,726	1,341	–	29,236
May	16,179	14,117	4,035	1,698	–	36,029
June	12,151	12,647	3,798	1,981	–	30,577
July	10,889	13,922	5,679	3,601	–	34,091
August	12,383	13,369	6,903	3,935	–	36,590
September	10,959	14,328	8,336	4,417	3	38,043
October	14,823	19,540	13,127	9,646	179	57,315
November	21,308	20,560	10,213	8,050	504	60,635
December	16,167	14,880	7,440	5,663	175	44,325
January, 1913	16,551	10,385	3,083	2,293	52	32,362
February	13,196	8,387	2,466	2,820	95	26,964
March	12,263	7,204	2,289	3,414	53	25,223
Total	172,408	158,967	70,095	48,859	1,061	451,390
"Condemned" of total	1,392	1,758	411	218	1	3,780

1913-14.

April, 1913	19,873	15,383	2,798	4,197	78	42,329
May	18,834	17,976	2,945	4,524	68	44,347
June	15,956	16,939	2,746	4,231	33	39,905
July	16,008	17,692	4,170	5,152	4	43,026
August	14,348	16,145	4,439	5,118	–	40,050
September	18,583	23,633	7,051	5,858	14	55,139
October	27,330	32,019	14,017	10,514	376	84,256
November	24,842	24,306	7,936	11,482	901	69,467
December	15,607	13,091	4,159	8,811	388	42,056
January, 1914	11,523	7,519	2,944	4,161	95	26,242
February	7,863	6,673	1,507	3,080	94	19,217
March	9,853	10,814	2,062	3,209	22	25,960
Total	200,620	202,190	56,774	70,337	2,073	531,994
"Condemned" of total	1,654	4,837	392	291	3	7,177

	1914-15			1915-16	
	Killed	Condemned		Killed	Condemned
April, 1914	40,189	1,493	April, 1915	40,958	2,222
May	41,685	671	May	40,629	1,228
June	39,734	593	June	36,800	1,084
July	37,208	375	July	37,520	705
August	45,974	311	August	42,372	413
September	49,961	430	September	49,261	560
October	52,896	543	October	64,609	786
November	74,272	885	November	80,127	1,079
December	57,806	788	December	47,526	578
January, 1915	29,874	401	January, 1916	31,694	350
February	24,963	351	February	31,650	486
March	35,863	1,177	March	39,008	1,072
Total	530,425	8,018	Total	542,154	10,563

TABLE VIII.—Live Stock slaughtered at Canadian Inspected Establishments by Fiscal Years, 1912-13 to 1919-20—Continued.

CATTLE, 1916-17.

Month	Ontario	Quebec	Manitoba	Saskatchewan, Alberta and British Columbia	Maritime and Prince Edward Island	Total
April, 1916	21,466	12,876	2,828	3,792	55	41,017
May	27,619	19,377	3,269	4,487	12	54,764
June	22,857	12,371	3,912	5,075	–	44,315
July	18,397	10,340	4,256	6,228	–	39,221
August	24,437	15,052	6,673	7,205	–	53,367
September	26,847	17,279	8,523	10,212	166	63,027
October	31,961	21,650	14,332	17,195	384	85,522
November	40,276	27,597	13,452	15,856	356	97,537
December	26,882	21,613	6,407	8,589	729	64,220
January, 1917	23,030	11,453	3,013	4,633	253	42,382
February	15,728	7,958	2,035	3,272	308	29,301
March	18,814	9,196	2,495	3,453	228	34,186
Total	298,414	186,762	71,195	89,997	2,491	648,859
"Condemned" of total	2,987	6,822	613	459	7	10,888

1917-18.

April, 1917	21,957	14,144	2,500	3,584	80	42,265
May	25,692	16,271	3,438	4,253	210	49,864
June	21,178	12,621	3,421	4,557	48	41,825
July	22,836	12,982	4,691	5,129	1	45,639
August	28,947	13,878	14,056	11,845	3	68,729
September	32,031	18,163	14,962	17,423	142	82,721
October	42,649	25,960	22,524	24,134	461	115,728
November	42,454	23,408	20,264	22,349	830	109,305
December	27,088	12,770	10,479	13,684	732	64,753
January, 1918	25,081	8,683	3,175	5,160	559	42,658
February	20,464	5,988	2,476	3,475	323	32,726
March	24,652	11,287	3,439	3,297	197	42,872
Total killed	335,029	176,155	105,425	118,890	3,586	739,085
"Condemned" of total	3,170	3,235	933	562	15	7,915

	1918–19			1919–20	
	Killed	Condemned		Killed	Condemned
April, 1918	56,732	820	April, 1919	68,238	1,562
May	64,772	692	May	57,672	1,017
June	48,296	392	June	46,421	631
July	62,524	596	July	79,405	1,021
August	82,621	537	August	98,574	1,056
September	98,385	680	September	98,099	–
October	119,164	1,026	October	134,106	–
November	119,968	1,397	November	139,614	–
December	111,175	1,350	December	100,750	–
January, 1919	47,937	740	January, 1920	47,916	–
February	32,235	426	February	33,103	–
March	43,964	922	March	56,741	–
Total	887,773	9,578	Total	960,639	–

TABLE VIII.—Live Stock slaughtered at Canadian Inspected Establishments by Fiscal Years, 1912-13 to 1919-20—Continued.

SWINE, 1912-13.

Month	Ontario	Quebec	Manitoba	Saskatchewan, Alberta and British Columbia	Maritime and Prince Edward Island	Total
April, 1912	85,548	29,336	11,297	5,583	706	132,470
May	97,966	33,617	13,082	8,833	393	153,891
June	83,344	27,798	12,574	11,531	238	135,485
July	69,023	28,979	9,782	8,569	–	116,353
August	81,306	29,655	9,422	6,452	–	126,835
September	62,935	30,630	6,153	3,113	66	102,897
October	96,432	36,900	4,531	3,768	1,389	143,020
November	100,778	32,148	7,646	5,583	5,073	151,228
December	77,993	40,116	10,026	7,118	6,117	141,370
January, 1913	89,449	28,712	13,005	11,263	3,052	145,481
February	81,741	25,123	11,051	13,878	742	132,535
March	64,328	24,184	14,837	21,547	1,279	126,175
Total	990,843	367,198	123,406	107,238	19,055	1,607,740
"Condemned" of total	1,331	859	452	448	3	3,093

1913-14.

April, 1913	81,515	27,133	12,426	22,271	1,265	144,610
May	88,039	30,856	14,290	25,102	603	158,890
June	68,254	22,958	21,592	28,140	268	141,212
July	67,560	23,740	14,864	23,672	–	129,836
August	63,405	22,847	17,034	19,692	–	122,978
September	63,914	30,382	6,508	12,485	289	113,578
October	77,648	29,055	8,862	15,777	2,320	133,662
November	85,035	27,740	14,504	26,029	3,721	157,029
December	70,946	30,096	17,989	34,910	4,723	158,664
January, 1914	81,919	28,833	29,429	54,168	2,161	196,510
February	69,440	22,629	27,162	55,182	756	175,169
March	74,758	24,396	24,372	41,729	1,617	166,872
Total	892,433	320,665	209,032	359,157	17,723	1,799,010
"Condemned" of total	1,262	779	657	1,302	7	4,007

	1914-15			1915-16	
	Killed	Condemned		Killed	Condemned
April, 1914	168,671	464	April, 1915	201,894	505
May	161,522	470	May	214,451	611
June	193,912	537	June	213,745	710
July	187,184	688	July	183,097	605
August	155,953	611	August	135,414	459
September	157,860	389	September	136,092	397
October	197,428	702	October	210,345	453
November	226,136	838	November	206,927	497
December	268,212	815	December	233,036	629
January, 1915	336,173	711	January, 1916	230,094	620
February	288,173	596	February	190,176	550
March	257,114	660	March	208,422	548
Total	2,598,338	7,481	Total	2,363,693	6,584

TABLE VIII.—Live Stock slaughtered at Canadian Inspected Establishments by Fiscal Years, 1912-13 to 1919-20—Continued.

SWINE, 1916–17.

Month	Ontario	Quebec	Manitoba	Saskatchewan, Alberta and British Columbia	Maritime and Prince Edward Island	Total
April, 1916	108,325	21,233	22,031	30,886	899	183,374
May	101,377	23,211	20,400	33,916	532	179,436
June	108,575	22,588	18,515	28,101	207	177,986
July	87,735	22,949	15,726	20,182	–	146,592
August	107,968	30,939	10,120	17,256	–	166,283
September	111,003	40,401	7,242	13,228	183	172,057
October	122,313	36,903	8,451	11,584	2,529	181,780
November	169,458	41,305	18,440	24,045	4,399	257,647
December	129,921	29,525	18,557	44,438	3,190	225,631
January, 1917	106,510	23,061	19,992	47,112	1,796	198,471
February	81,870	24,168	14,274	33,781	1,727	155,820
March	114,374	22,209	17,292	44,561	1,998	200,434
Total	1,349,429	338,492	191,040	349,090	17,460	2,245,511
"Condemned" of total	2,790	858	848	1,634	3	6,133

1917–18.

April, 1917	109,057	18,912	14,433	37,399	1,025	180,726
May	113,284	23,344	17,209	35,445	513	189,795
June	95,639	22,535	19,203	33,083	90	170,550
July	83,415	21,368	11,951	26,807	–	140,341
August	86,719	25,833	9,327	20,583	–	142,462
September	66,482	24,944	4,582	10,659	4	106,671
October	105,224	30,320	8,826	11,775	1,237	157,382
November	138,631	33,780	14,724	21,029	4,221	212,385
December	136,065	25,978	23,508	38,460	4,468	228,479
January, 1918	113,791	22,697	26,855	49,627	2,549	215,519
February	90,704	19,053	22,113	44,722	1,169	177,761
March	115,857	20,124	25,205	41,599	1,626	204,411
Total	1,254,868	288,888	197,936	371,088	16,902	2,129,682
"Condemned" of total	2,599	614	923	1,642	9	5,787

	1918–19			1919–20	
	Killed	Condemned		Killed	Condemned
April, 1918	159,380	343	April, 1919	216,352	457
May	204,663	467	May	185,606	377
June	142,617	421	June	190,572	494
July	162,544	519	July	181,855	668
August	134,931	473	August	144,205	428
September	112,684	217	September	153,094	–
October	191,911	350	October	185,360	–
November	280,041	544	November	215,600	–
December	285,177	598	December	199,826	–
January, 1919	253,977	618	January, 1920	184,572	–
February	211,084	477	February	152,896	–
March	194,345	414	March	161,809	–
Total	2,333,354	5,441	Total	2,171,747	–

TABLE VIII.—Live Stock slaughtered at Canadian Inspected Establishments by Fiscal Years, 1912-13 to 1919-20—Continued.

SHEEP, 1912-13.

Month	Ontario	Quebec	Manitoba	Saskatchewan, Alberta and British Columbia	Maritime and Prince Edward Island	Total
April, 1912	1,768	969	581	84	–	3,402
May	5,415	3,842	616	1,267	–	11,140
June	6,162	7,473	2,673	2,011	–	18,319
July	9,278	12,737	5,109	3,423	–	30,547
August	15,523	17,300	7,775	3,229	–	43,827
September	18,376	28,616	8,677	4,194	11	59,874
October	32,040	41,267	9,085	12,067	9,258	103,717
November	32,599	27,708	16,636	20,570	15,599	113,112
December	15,218	9,220	5,862	8,502	2,235	41,037
January, 1913	6,361	4,675	1,410	1,343	1,712	15,501
February	2,474	825	917	2,700	14	6,930
March	1,647	905	209	5,477	–	8,238
Total	146,861	155,537	59,550	64,867	28,829	455,644
"Condemned" of total	201	82	58	18	26	385

1913-14.

April, 1913	1,302	1,596	78	8,350	–	11,326
May	3,373	4,168	408	7,437	13	15,399
June	7,564	8,537	1,122	7,081	3	24,307
July	12,328	14,446	3,042	8,682	–	38,498
August	15,734	16,498	4,743	9,131	–	46,106
September	28,345	32,847	6,154	8,540	1,274	77,160
October	31,560	38,592	10,719	16,304	8,537	105,712
November	28,266	21,783	17,517	22,432	10,651	100,648
December	15,432	7,084	7,332	19,543	689	50,080
January, 1914	4,276	4,651	701	7,520	4	17,152
February	1,332	656	582	4,894	20	7,484
March	634	579	155	4,043	1	5,412
Total	150,146	151,436	52,553	123,957	21,192	499,284
"Condemned" of total	148	154	23	51	23	399

	1914-15			1915-16	
	Killed	Condemned		Killed	Condemned
April, 1914	5,431	17	April, 1915	2,089	5
May	9,813	9	May	5,573	21
June	17,246	19	June	16,793	33
July	31,415	20	July	29,223	24
August	39,932	36	August	43,640	38
September	61,167	29	September	57,689	53
October	100,227	76	October	91,843	91
November	119,844	99	November	96,199	170
December	38,495	50	December	31,399	49
January, 1915	13,885	44	January, 1916	16,898	50
February	5,014	11	February	7,781	40
March	4,704	12	March	4,020	15
Total	447,173	422	Total	403,147	589

TABLE VIII.—Live Stock slaughtered at Canadian Inspected Establishments by Fiscal Years, 1912-13 to 1919-20—Concluded.

SHEEP, 1916-17.

Month	Ontario	Quebec	Manitoba	Saskatchewan, Alberta and British Columbia	Maritime and Prince Edward Island	Total
April, 1916	1,003	786	214	2,420	–	4,423
May	1,574	3,158	806	3,313	–	8,831
June	6,421	5,343	891	4,288	–	16,943
July	7,670	9,018	2,417	4,813	–	23,918
August	15,841	15,516	4,287	2,633	–	38,277
September	24,161	17,224	5,237	6,843	1,540	55,005
October	38,217	24,646	7,919	10,912	10,412	92,106
November	47,627	30,915	5,488	16,826	14,016	114,872
December	14,079	8,578	2,395	6,878	372	32,302
January, 1917	6,945	10,006	801	2,670	73	20,495
February	2,510	852	179	1,993	73	5,607
March	1,476	310	75	1,872	63	3,796
Total	167,524	126,332	30,709	65,461	26,549	416,575
"Condemned" of total	132	256	26	29	72	515

1917-18.

April, 1917	728	262	77	1,784	7	2,858
May	1,338	1,054	85	1,407	5	3,889
June	2,904	1,800	211	1,849	–	6,764
July	6,545	5,012	290	2,740	–	14,587
August	15,484	9,823	2,565	3,867	11	31,750
September	26,905	15,507	3,040	3,362	3,177	51,991
October	34,610	22,302	3,875	7,835	12,057	80,679
November	43,141	22,022	2,751	10,632	13,436	91,982
December	15,859	7,365	905	3,764	1,069	28,962
January, 1918	7,140	6,526	250	2,155	41	16,112
February	2,680	1,059	176	676	22	4,613
March	1,766	219	39	657	49	2,710
Total	159,100	92,951	14,264	40,708	29,874	336,897
"Condemned" of total	88	195	23	53	77	436

	1918-19			1919-20†	
	Killed	Condemned		Killed	Condemned
April, 1918	1,457	4	April, 1919	3,327	12
May	2,588	7	May	2,962	6
June	9,302	16	June	8,185	11
July	20,100	34	July	31,687	37
August	33,895	26	August	58,737	59
September	49,741	37	September	95,849	–
October	83,307	108	October	161,850	–
November	98,654	73	November	151,054	–
December	55,545	82	December	56,467	–
January, 1919	25,484	54	January, 1920	20,537	–
February	11,666	27	February	5,907	–
March	6,192	13	March	3,562	–
Total	397,961	481	Total	600,124	–

TABLE IX. Slaughterings in Packing Houses and

No.	1917		Cattle Slaughtered		Sheep Slaughtered	
			Quantity	Value	Quantity	Value
			Lbs.	$	Lbs.	$
1	British Columbia	(6 plants)	16,432,523	2,254,851	1,053,424	271,439
2	Alberta	(6 ")	40,444,161	4,583,919	1,653,619	307,701
3	Saskatchewan	(2 ")	10,267,165	1,585,269	234,092	60,624
4	Manitoba	(9 ")	54,730,578	6,113,408	782,571	163,141
5	Ontario	(30 ")	163,382,562	24,471,436	8,169,571	1,740,492
6	Quebec	(16 ")	54,537,629	6,908,036	3,744,960	771,188
7	New Brunswick	(5 ")	535,000	49,500	12,480	1,800
8	Nova Scotia and Prince Edward Island	(5 ")	840,000	63,200	30,000	4,000
9	Dominion of Canada	(79 ")	341,169,618	46,029,619	15,680,717	3,320,385

OUTPUT OF PACKING HOUSES

No.	1917		Beef, Fresh		Beef, Cured		Veal		Pork, Fresh	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
			Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$
1	British Columbia	(6 plants)	15,612,166	2,838,877	115,000	20,319	20,000	3,600	3,173,210	754,669
2	Alberta	(6 ")	40,821,191	5,076,872	81,600	9,820	549,775	96,845	14,393,102	2,916,494
3	Saskatchewan	(2 ")	9,257,483	787,061	381,297	41,942	146,044	24,466	4,549,022	386,958
4	Manitoba	(9 ")	49,038,500	6,465,292	3,349,187	502,378	784,293	113,783	8,235,102	1,786,551
5	Ontario	(30 ")	209,628,952	30,232,076	2,187,733	328,412	4,569,075	763,654	29,766,927	6,633,661
6	Quebec	(16 ")	50,035,631	8,474,589	378,595	55,627	3,020,769	499,294	24,735,344	6,377,346
7	New Brunswick	(5 ")	390,000	51,000	80,000	16,800	–	–	120,000	21,000
8	Nova Scotia and Prince Ed. Isl.	(5 ")	600,000	84,000	120,000	18,200	–	–	–	–
9	Dom. of Canada	(79 ")	375,383,923	54,009,767	6,693,412	993,498	9,089,956	1,501,642	81,962,707	18,876,679

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Abattoirs, Industrial Census, 1917.*

Hogs Slaughtered		Calves Slaughtered		All Other Slaughtered	Total Slaughterings	Dressed Meats purchased fresh or partially cured	Grand Total of Material used	No.
Quantity	Value	Quantity	Value	Value	Value	Value	Value	
Lbs.	$	Lbs.	$	$	$	$	$	
7,901,481	1,660,419	44,000	4,160	–	4,190,869	495,250	4,686,119	1
39,791,688	7,729,731	561,662	82,683	–	12,704,034	31,117	12,735,151	2
4,739,085	1,158,099	116,877	17,139	–	2,821,151	–	2,821,151	3
26,853,837	5,55 ,145	857,794	123,416	–	11,956,110	767,947	12,724,057	4
195,341,067	36,768,800	4,900,460	793,143	18,000	63,791,871	32,558,140	96,350,011	5
49,152,343	9,354,048	4,050,134	499,195	51,443	17,583,913	6,997,103	24,581,016	6
952,400	160,160	6,000	600	–	212,060	99,000	311,060	7
5,436,610	843,595	–	–	–	910,795	46,960	957,755	8
330,168,511	63,230,997	10,536,927	1,520,359	69,443	114,170,803	40,995,517	155,166,320	9

AND ABATTOIRS, 1917.

Pork, Salted		Hams, Shoulders Bacon and Sides		Mutton and Lamb		Canned Meats		Lard		No.
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$	
673,430	170,145	2,547,557	833,652	1,049,094	243,844	3,698	370	1,020,406	268,792	1
2,687,370	566,758	14,851,358	3,712,886	1,732,536	389,659	4,002,098	903,698	2,960,887	668,951	2
2,160,967	677,895	249,976	80,967	266,002	63,142	655,436	171,449	422,985	63,031	3
5,008,000	1,290,275	7,046,984	1,944,701	1,479,942	275,564	176,891	16,220	5,078,983	1,145,486	4
24,419,295	5,724,150	215,338,384	25,110,977	8,231,952	1,765,713	19,195,700	2,935,715	23,324,436	4,846,634	5
4,957,717	1,267,726	42,387,009	11,391,310	4,089,098	1,033,949	5,982,406	1,200,825	4,156,098	968,064	6
173,000	36,140	529,980	127,057	12,000	2,400	–	–	65,557	14,540	7
851,200	173,640	3,264,000	855,240	30,000	6,000	23,200	9,000	290,000	62,300	8
40,930,979	9,906,729	286,215,248	44,056,790	16,890,624	3,780,271	30,039,429	5,237,277	37,319,352	8,037,798	9

*This includes all slaughtering and meat packing establishments inspected and uninspected with the exception of small local butchers.

TABLE IX (Continued)—Slaughterings in Packing Houses and

No.	1918		Cattle Slaughtered		Sheep Slaughtered	
			Quantity	Value	Quantity	Value
			Lbs.	$	Lbs.	$
1	British Columbia	(6 plants)	14,553,619	3,227,881	484,120	154,789
2	Alberta	(6 ")	50,026,962	8,611,648	2,635,430	525,687
3	Saskatchewan	(3 ")	15,486,638	3,003,225	264,391	75,653
4	Manitoba	(8 ")	58,721,485	10,375,566	1,287,483	377,063
5	Ontario	(27 ")	150,553,027	29,395,845	8,996,391	2,218,864
6	Quebec	(16 ")	31,434,822	5,042,086	2,024,318	581,437
7	New Brunswick	(6 ")	1,124,742	15,687	–	–
8	Nova Scotia and Prince Edward Island	(6 ")	800,450	120,067	224,135	61,616
9	Dominion of Canada	(78 ")	331,681,746	59,692,005	15,916,268	4,585,109

OUTPUT OF PACKING HOUSES

No.	1918		Beef, Fresh		Beef, Cured		Veal		Pork, Fresh	
			Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
			Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$
1	British Columbia	(6 plants)	16,159,684	3,211,813	165,000	37,500	223,677	53,776	2,808,400	819,250
2	Alberta	(6 ")	47,286,890	8,495,288	714,500	116,437	807,046	135,973	10,601,653	2,591,768
3	Saskatchewan	(3 ")	14,301,988	3,032,953	18,520	3,902	98,114	16,362	574,387	141,168
4	Manitoba	(8 ")	55,267,787	10,871,087	55,535	10,952	675,975	115,126	6,817,912	1,816,708
5	Ontario	(27 ")	168,077,301	33,202,918	3,036,163	682,251	5,256,226	1,219,340	29,867,063	7,040,902
6	Quebec	(16 ")	33,262,365	6,204,176	977,891	183,005	2,988,322	595,561	10,855,257	3,097,722
7	New Brunswick	(6 ")	79,823	13,062	2,090	350	–	–	172,051	21,219
8	Nova Scotia and Prince Ed. Isl.	(6 ")	760,450	118,060	–	–	–	–	–	–
9	Dom. of Canada	(78 ")	335,196,288	65,149,337	4,969,609	1,034,397	10,049,360	2,136,138	61,694,723	15,528,827

TABLE X.—Part I.—Production and Value of Creamery Butter by Provinces, 1915, 1916, 1917 and 1918.*

Province	1915	1916	1917	1918	1915	1916	1917	1918
	Lbs.	Lbs.	Lbs.	Lbs.	$	$	$	$
Prince Edward Island	539,516	613,880	597,271	641,754	151,065	184,164	239,940	293,572
Nova Scotia	1,240,483	1,586,679	1,746,662	1,756,905	346,011	505,000	711,652	808,755
New Brunswick	776,416	709,932	565,699	660,010	231,838	236,193	233,686	302,818
Quebec	36,621,491	34,323,275	34,392,562	36,761,057	10,899,810	11,516,148	13,689,310	16,364,950
Ontario	26,414,120	24,680,109	28,714,352	29,397,485	7,534,653	8,031,997	11,219,029	13,136,470
Manitoba	5,839,667	6,574,510	7,050,921	8,436,962	1,693,503	2,038,109	2,595,472	3,897,476
Saskatchewan	3,811,014	4,310,669	4,220,758	5,009,014	1,055,000	1,338,180	1,575,965	2,221,403
Alberta	7,544,148	8,521,784	8,943,971	9,053,237	2,021,448	2,619,248	3,414,541	4,025,851
British Columbia	1,204,598	1,243,292	1,294,743	1,581,924	451,724	497,316	594,623	807,861
Canada	83,991,453	82,564,130	87,526,939	93,298,348	24,385,052	26,966,355	34,274,218	41,859,156

*For full details on dairy produce, see special annual report on "Dairy Products."

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Abattoirs, Industrial Census, 1918.*

Hogs Slaughtered		Calves Slaughtered		All other Slaughtered	Total Slaughterings	Meats Purchased partially cured	Total of Materials used	No.
Quantity	Value	Quantity	Value	Value	Value	Value	Value	
Lbs.	$	Lbs.	$	$	$	$	$	
7,517,062	1,961,368	239,128	30,450	112,346	5,486,834	1,337,160	6,823,994	1
42,688,205	10,750,677	1,271,614	135,387	–	20,643,399	1,229,465	21,272,864	2
7,555,866	1,945,973	122,726	23,896	–	5,048,747	10,353	5,059,100	3
40,541,515	10,373,750	851,284	130,949	17,356	21,274,684	1,685,194	22,959,878	4
188,681,566	47,209,403	5,258,490	1,078,568	1,003	79,803,683	12,854,264	92,657,947	5
39,085,455	10,205,737	3,774,848	710,139	35,100	16,574,499	4,043,854	20,618,353	6
250,000	62,500	1,000	200	–	78,387	189,628	268,015	7
–	–	–	–	–	771,683	571,270	1,342,953	8
326,319,669	82,509,408	11,519,090	2,129,589	165,805	149,081,916	21,921,188	171,003,104	9

AND ABATTOIRS, 1918.

Pork, Salted		Hams, Shoulders Bacon and Sides		Mutton and Lamb		Canned Meats		Lard		No.
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$	
709,030	195,000	3,021,000	1,207,832	2,630,084	662,024	–	1,754	591,900	164,210	1
8,040,567	2,195,033	14,909,302	4,877,757	5,572,453	872,035	478,519	68,548	6,760,508	1,903,609	2
2,915,922	942,687	3,153,161	1,138,848	195,477	47,646	–	–	622,355	181,139	3
21,988,795	6,856,000	3,720,184	1,466,435	1,422,190	415,774	371,600	37,862	4,895,125	1,376,413	4
17,821,591	5,476,964	144,702,301	46,516,623	9,079,081	2,214,785	3,180,550	2,664,364	23,461,317	6,526,768	5
3,887,562	1,164,449	24,975,466	8,534,880	2,391,568	583,535	5,453,190	1,436,454	12,257,394	1,036,869	6
247,671	64,568	499,168	158,729	–	–	–	–	44,400	13,220	7
893,000	174,740	4,167,600	1,162,135	53,900	11,368	88,000	46,824	190,000	55,000	8
56,495,108	17,070,441	199,148,182	65,063,239	21,344,753	4,807,167	9,571,859	4,255,806	48,822,999	11,257,228	9

*This includes all slaughtering and meat packing establishments inspected and uninspected with the exception of small local butchers.

TABLE X.—Part II.—Production and Value of Factory Cheese by Provinces, 1915, 1916, 1917 and 1918.†

Province	1915	1916	1917	1918	1915	1916	1917	1918
	Lbs.	Lbs.	Lbs.	Lbs.	$	$	$	$
Prince Edward Island	2,260,000	2,121,736	2,234,935	2,201,368	327,700	409,495	466,317	503,283
Nova Scotia	125,580	94,727	67,497	61,195	18,837	17,051	14,269	13,897
New Brunswick	1,165,651	1,185,664	1,244,106	1,185,225	168,086	210,693	257,645	267,577
Quebec	54,217,113	61,906,750	67,835,017	62,070,162	7,571,691	11,245,104	14,172,273	13,976,866
Ontario	125,001,136	126,015,870	121,173,086	107,886,724	18,831,413	23,312,935	25,771,944	24,356,019
Manitoba	726,725	880,728	1,003,645	657,585	109,008	158,931	199,036	143,821
Saskatchewan	–	–	–	13,573	–	–	–	3,257
Alberta	381,632	745,122	1,274,905	552,834	68,441	154,433	280,185	130,911
British Columbia	10,000	18,000	71,094	249,647	2,000	3,960	18,954	60,901
Canada	183,887,837	192,968,597	194,904,336	174,878,313	27,097,176	35,512,622	41,180,623	39,456,532

†For full details on dairy produce, see special annual report on "Dairy Products".

TABLE XI.—Stocks of Storage Foods on Hand at Specified Dates, in Cold Storage and in Process of Cure.

—	Eggs	Butter	Cheese	Beef			Pork			Mutton and Lamb	Oleo-margarine	Poultry
				Fresh	Cured	In process of cure	Fresh	Cured	In process of cure			
	Doz.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
January 1, 1918—												
Maritime Provinces	157,105	164,940	116,344	502,605	(Fresh and pickled)		867,065	(Fresh and cured)		861,303		6,822
Quebec	1,040,019	3,824,350	7,124,850	6,323,477	("	")	3,451,249	("	")	406,922		696,462
Ontario—Toronto	738,559	924,664	1,950,189	612,951	("	")	6,271,379	("	")	95,057		1,146,062
Toronto	529,495	1,956,794	1,825,673	14,216,765	("	")	16,839,709	("	")	1,577,467	Not	692,905
Manitoba	781,415	1,833,170	367,257	7,464,764	("	")	2,931,617	("	")	419,082	given	140,262
Alberta and Saskatchewan	639,701	1,548,978	806,391	12,184,468	("	")	6,227,873	("	")	523,824		488,830
British Columbia	258,196	1,220,731	184,281	2,030,922	("	")	1,121,314	("	")	79,828		197,964
Dominion of Canada	4,144,490	11,273,627	12,374,985	43,335,952	("	")	37,710,206	("	")	3,963,483		3,369,307
February 1, 1918—												
Maritime Provinces	43,205	160,572	111,347	2,505,229	5,000	*	160,197	918,158	†	854,833		20,611
Quebec	387,350	2,200,358	2,484,539	4,035,528	463,771	*	329,213	2,225,677	†	1,122,265		784,269
Ontario—Toronto	194,334	517,721	1,854,010	743,666	39,410	*	594,658	4,570,991	†	103,369		864,057
Toronto	239,353	1,720,406	1,678,227	10,389,021	283,754	*	1,567,285	11,630,547	†	1,525,912	Not	537,452
Manitoba	319,946	1,068,313	357,007	8,985,838	–	*	818,775	2,665,558	†	624,704	given	282,912
Alberta and Saskatchewan	276,005	975,440	856,334	10,813,057	17,480	*	1,753,363	5,471,165	†	498,060		422,908
British Columbia	99,765	890,637	188,453	1,850,364	4,336	*	272,555	973,467	†	103,087		192,726
Dominion of Canada	1,559,949	7,542,447	7,529,923	39,383,303	814,351	*	5,496,046	28,455,563	†	4,832,230		3,105,535
March 1, 1918—												
Maritime Provinces	790	148,029	172,417	2,932,200	40,600	*	93,145	833,740	†	658,811		81,440
Quebec	78,315	1,414,607	1,609,435	3,090,975	323,324	*	356,446	3,219,406	†	802,803		615,063
Ontario—Toronto	15,066	329,554	1,739,016	761,359	37,448	*	717,727	3,815,947	†	117,609		501,953
Toronto	60,959	984,537	1,323,540	5,876,418	75,434	*	1,716,314	10,593,268	†	1,170,880	Not	483,731
Manitoba	31,921	235,818	297,892	6,159,099	873,701	*	883,213	2,419,749	†	699,979	given	245,367
Alberta and Saskatchewan	56,464	595,271	602,084	8,074,874	7,600	*	2,489,354	5,189,965	†	211,182		334,948
British Columbia	10,026	592,315	141,618	1,722,738	8,341	*	369,985	821,731	†	155,349		226,688
Dominion of Canada	260,141	4,300,131	5,886,612	28,617,663	1,366,448	*	6,626,184	26,893,806	†	3,816,673		2,402,190
April 1, 1918—												
Maritime Provinces	2,811	117,422	134,678	2,822,762	100,800	*	59,073	799,772	†	339,013		70,066
Quebec	91,050	657,170	1,238,999	3,619,705	85,802	*	393,157	3,267,398	†	673,192		522,510
Ontario—Toronto	30,979	183,554	1,005,554	625,470	36,237	*	2,140,375	2,933,360	†	77,562		490,525
Toronto	54,783	846,408	1,138,535	9,838,980	260,197	*	1,880,761	13,105,761	†	859,512	Not	450,857
Manitoba	14,803	182,855	175,963	4,461,241	2,655	*	1,035,715	2,746,806	†	486,008	given	181,979
Alberta and Saskatchewan	33,448	366,293	430,383	6,916,089	4,622	*	2,311,349	6,181,395	†	363,544		216,468
British Columbia	48,424	450,499	142,095	1,499,889	11,486	*	439,811	769,879	†	134,400		148,033
Dominion of Canada	270,898	2,804,201	4,266,207	29,784,142	501,799	*	8,860,241	29,804,371	†	2,933,231		2,090,038

May 1, 1918—												
Maritime Provinces	15,430	36,338	105,993	2,249,454	130,000	*	64,458	959,962	†	36,840		65,955
Quebec	881,696	220,612	988,386	3,410,557	33,889	*	420,277	4,927,161	†	536,417		363,758
Ontario -Toronto	1,290,464	102,818	611,093	363,188	122,716	*	632,505	3,856,953	†	44,950		496,076
Toronto	375,630	234,175	865,819	3,792,884	101,067	*	1,725,193	12,281,813	†	271,369	Not	366,053
Manitoba	168,782	202,605	121,242	4,068,738	24,428	*	2,345,386	3,833,248	†	319,601	given	95,765
Alberta and Saskatchewan	484,921	197,386	348,275	5,997,877	9,847	*	2,505,461	5,694,775	†	216,355		107,785
British Columbia	550,065	188,226	100,964	1,279,438	8,325	*	531,892	736,277	†	24,123		144,759
Dominion of Canada	3,766,997	1,182,211	3,141,771	21,162,136	430,272	*	8,225,172	32,290,189	†	1,449,655		1,640,152
June 1, 1918—												
Maritime Provinces	136,233	32,172	79,049	1,247,684	91,400	*	55,125	911,309	†	520,596		54,030
Quebec	2,371,129	1,119,821	1,595,738	1,620,030	47,199	*	396,313	4,990,638	†	273,659		180,392
Ontario—Toronto	1,686,115	233,732	406,741	272,868	33,535	*	795,762	4,248,401	†	23,714		338,172
Toronto	1,389,280	423,658	498,962	6,585,622	335,152	*	2,086,796	15,248,852	†	90,541	Not	190,875
Manitoba	699,927	189,215	144,844	3,225,925	34,053	*	2,227,440	4,006,707	†	152,688	given	40,165
Alberta and Saskatchewan	1,252,429	151,839	173,304	5,285,169	9,403	*	3,604,750	6,200,045	†	143,428		39,059
British Columbia	887,475	101,236	68,269	537,506	7,924	*	447,631	720,396	†	313,198		61,382
Dominion of Canada	8,422,588	2,251,673	2,966,997	18,774,804	558,666	*	9,613,817	36,326,348	†	1,517,824		904,075
July 1, 1918—												
Maritime Provinces	134,840	132,095	73,659	349,377	52,300	*	42,058	753,743	†	11,330		42,567
Quebec	2,980,351	4,565,095	7,831,204	1,591,095	34,738	*	529,629	4,791,498	†	236,349		87,856
Ontario—Toronto	2,429,633	1,050,105	764,910	195,686	48,020	*	559,118	4,283,682	†	41,101		49,892
Toronto	1,499,689	1,838,931	301,942	4,147,486	582,072	*	1,722,266	12,236,004	†	172,464	Not	118,286
Manitoba	979,052	965,769	78,161	1,164,694	245,282	*	2,477,684	4,937,738	†	140,675	given	22,177
Alberta and Saskatchewan	1,218,594	424,867	106,969	1,939,701	24,909	*	3,939,379	5,342,436	†	127,798		12,324
British Columbia	1,168,239	500,228	126,474	488,235	14,141	*	207,287	904,440	†	96,744		113,980
Dominion of Canada	10,410,407	9,477,990	9,283,319	9,876,274	1,001,462	*	9,567,412	33,249,541	†	826,461		417,082
August 1, 1918—												
Maritime Provinces	504,183	370,203	28,422	492,915	14,225	–	18,820	472,710	–	66,696	16,910	29,111
Quebec	3,493,066	8,900,510	10,374,092	1,756,852	7,923	153,550	860,599	1,444,762	2,383,374	120,839	191,453	43,034
Ontario—Toronto	2,529,131	2,009,487	829,035	545,387	36,310	–	737,173	1,456,651	2,824,380	28,103	97,278	9,197
Toronto	1,946,130	4,245,761	457,345	5,949,696	159,323	193,476	3,629,974	4,808,719	7,135,935	227,721	103,483	39,361
Manitoba	1,000,517	2,316,659	91,140	3,595,144	–	1,940	3,214,936	4,296,101	265,848	92,612	16,975	13,512
Alberta and Saskatchewan	1,322,294	1,455,268	81,253	4,020,471	1,719	22,253	4,043,372	2,475,189	3,538,411	47,941	20,706	67,192
British Columbia	1,616,767	1,425,154	104,050	631,399	803	–	566,853	448,168	464,480	1,704,027	42,983	15,486
Dominion of Canada	12,412,088	20,723,542	11,965,337	16,991,864	220,294	371,219	13,071,727	15,402,300	16,552,437	2,287,939	489,788	216,893

*During the first seven months of 1918 Beef in process of cure is included in the total of Beef cured.

†During the first seven months of 1918 Pork in process of cure is included in the total for Pork cured.

Table for March 1 does not include holdings of the Harris Abattoir Co. of Toronto, Montreal and Quebec.

TABLE XI.—Stocks of Storage Foods on Hand at Specified Dates, in Cold Storage and in Process of Cure—Continued.

—	Eggs	Butter	Cheese	Beef			Pork			Mutton and Lamb	Oleomargarine	Poultry
				Fresh	Cured	In process of cure	Fresh	Cured	In process of cure			
	Doz.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
September 1, 1918—												
Maritime Provinces	618,709	550,831	26,805	504,476	22,759	–	16,857	301,538	–	72,951	3,924	23,733
Quebec	3,288,048	10,340,878	4,830,502	1,866,415	33,726	111,804	555,523	1,943,936	1,633,603	91,538	119,846	45,098
Ontario—Toronto	3,186,325	2,403,200	1,768,603	635,625	38,189	–	1,285,141	2,492,303	903,189	16,064	99,222	10,244
Toronto	1,886,881	4,940,167	389,743	5,958,834	136,616	360,160	2,219,745	8,169,254	2,096,586	239,417	88,256	14,982
Manitoba	1,014,080	3,457,676	245,417	4,978,838	–	1,800	1,558,555	3,837,882	285,881	89,225	9,914	19,451
Alberta and Saskatchewan	1,348,679	2,037,803	264,464	5,750,169	5,815	–	3,657,238	2,207,114	2,815,840	47,007	20,380	145,265
British Columbia	1,450,018	2,287,207	220,076	1,042,249	1,113	–	417,207	426,497	413,030	1,401,764	72,457	69,386
Dominion of Canada	12,792,740	26,617,821	7,745,610	20,736,006	238,218	473,764	9,710,366	19,378,524	8,148,129	1,957,966	411,005	328,149
October 1, 1918—												
Maritime Provinces	630,203	666,208	29,194	1,152,061	24,490	–	31,268	183,837	–	208,423	9,621	31,651
Quebec	3,016,501	10,480,816	3,449,056	2,916,963	116,471	87,334	891,901	2,430,848	1,850,956	136,626	241,830	116,545
Ontario—Toronto	2,919,182	2,429,343	1,179,371	703,522	42,791	185	914,900	2,301,538	1,064,545	33,353	55,951	29,125
Toronto	1,863,277	5,164,507	648,127	6,990,927	175,626	326,021	1,311,796	3,577,383	5,058,852	390,336	122,841	112,838
Manitoba	954,656	3,419,160	236,578	5,047,792	–	2,600	889,986	1,993,528	205,853	133,314	19,135	9,601
Alberta and Saskatchewan	1,070,802	2,189,858	195,580	7,380,076	150,316	–	2,800,864	1,666,232	2,643,832	99,066	19,564	226,559
British Columbia	818,989	2,801,284	281,709	919,320	2,845	–	264,163	384,778	408,617	2,539,010	20,485	69,330
Dominion of Canada	11,279,610	27,001,254	6,019,624	25,110,661	512,542	416,140	7,104,932	12,477,144	11,832,655	3,540,068	405,427	595,655
November 1, 1918—												
Maritime Provinces	540,106	566,144	24,158	1,816,884	23,390	–	81,879	103,142	139,530	547,606	12,567	39,022
Quebec	2,884,256	8,854,669	3,927,081	3,974,333	28,641	11,400	1,239,631	3,632,186	1,491,814	257,158	268,204	339,009
Ontario—Toronto	1,631,980	1,716,788	1,088,370	628,149	35,615	–	973,841	2,666,211	1,562,249	90,509	116,528	45,020
Toronto	1,573,949	4,209,195	513,486	10,078,729	205,238	329,627	1,685,790	3,679,727	7,199,193	1,031,324	224,724	438,609
Manitoba	880,493	619,884	91,655	2,104,380	2,245	1,820	261,240	1,349,262	106,370	53,148	4,223	26,928
Alberta and Saskatchewan	559,028	1,437,374	145,281	9,704,609	120,826	–	1,405,478	1,711,761	2,178,837	365,921	25,055	276,108
British Columbia	881,163	2,435,655	274,106	1,816,179	1,809	–	280,815	456,301	365,403	2,427,282	33,501	106,837
Dominion of Canada	8,950,975	19,838,609	6,064,137	31,053,263	417,764	342,847	5,928,674	13,598,590	13,043,396	4,772,948	684,842	1,271,533
December 1, 1918—												
Maritime Provinces	435,362	473,890	82,764	2,984,898	37,490	2,600	165,191	440,796	326,000	1,020,936	16,295	134,191
Quebec	2,654,682	6,901,283	2,654,927	6,480,953	18,427	184,784	1,985,086	3,147,614	2,377,418	1,363,145	408,013	982,823
Ontario—Toronto	946,048	1,418,443	1,357,206	6,741,225	2,267,542	325,806	1,253,017	2,695,760	1,938,049	153,393	123,152	663,670
Toronto	1,230,217	3,702,011	907,057	9,354,285	1,040	1,800	2,285,780	5,195,040	9,021,228	1,888,069	195,978	937,927
Manitoba	358,739	1,853,276	174,537	8,787,886	1,040	1,800	818,711	1,677,714	785,643	528,261	27,824	328,473
Alberta and Saskatchewan	433,446	1,807,624	290,808	15,942,419	116,870	–	2,095,407	1,953,336	2,150,372	782,004	17,519	842,623
British Columbia	1,105,978	1,752,017	154,276	1,880,541	1,061	–	321,878	284,725	509,180	2,536,423	28,842	175,060
Dominion of Canada	7,173,472	17,908,544	5,621,665	49,178,207	2,443,470	516,790	8,925,070	15,394,985	17,098,890	8,272,231	817,623	4,064,767

January 1, 1919—												
Maritime Provinces	113,495	313,976	48,524	3,098,405	34,490	–	253,638	85,284	465,000	1,112,953	10,989	138,931
Quebec	1,192,238	4,544,379	1,802,415	9,892,161	34,877	184,311	1,322,682	2,039,715	2,285,281	1,617,493	348,320	1,486,493
Ontario—Toronto	306,343	880,167	1,188,983	1,525,108	26,072	–	767,349	3,401,003	1,215,786	170,241	93,675	170,092
Toronto	952,204	2,893,183	867,856	14,456,609	276,913	716,352	1,611,386	5,291,677	8,271,227	2,215,532	216,451	1,412,245
Manitoba	148,331	1,534,237	123,020	10,898,262	4,100	–	647,633	3,073,540	74,524	536,597	66,197	570,009
Alberta and Saskatchewan	154,300	1,251,007	296,098	13,295,764	170,536	–	2,076,808	1,776,209	2,264,646	886,968	9,793	934,932
British Columbia	894,114	1,283,034	190,407	2,550,508	1,930	–	497,134	458,323	432,433	2,424,119	15,757	1,126,148
Dominion of Canada	3,761,025	12,699,983	4,430,303	55,716,817	549,518	900,663	7,176,630	16,105,802	15,008,897	8,963,903	761,182	5,838,850
February 1, 1919—												
Maritime Provinces	45,643	263,254	32,588	2,984,574	47,390	–	199,642	1,120,321	302,800	813,302	6,115	158,020
Quebec	567,896	3,330,996	1,299,560	8,516,319	2,000	144,700	1,381,679	3,442,277	1,430,268	1,031,541	263,046	1,508,601
Ontario—Toronto	72,667	565,021	911,153	2,376,412	24,005	–	786,418	3,354,784	699,456	179,846	89,699	173,442
Toronto	412,174	2,176,527	782,195	12,898,451	252,816	453,292	1,900,653	5,585,364	11,252,183	2,967,101	165,046	1,409,293
Manitoba	13,057	1,092,137	61,961	10,515,076	1,030	–	371,217	275,985	988,026	494,474	40,949	380,287
Alberta and Saskatchewan	58,819	742,656	299,035	11,595,368	6,654	–	3,255,549	3,043,159	3,461,654	897,627	16,213	1,114,523
British Columbia	423,023	1,028,372	98,818	2,455,380	4,650	–	453,272	517,370	348,868	2,279,458	15,939	434,650
Dominion of Canada	1,593,879	9,098,963	3,485,316	51,341,580	338,551	597,992	8,348,430	17,339,260	18,482,655	8,303,349	597,607	5,178,816
March 1, 1919—												
Maritime Provinces	38,111	183,937	21,273	3,004,551	31,300	–	125,290	1,215,795	204,060	669,020	11,418	144,302
Quebec	200,971	1,812,640	986,028	7,247,307	12,187	179,090	1,114,953	3,809,783	4,806,518	1,355,166	239,857	1,301,423
Ontario—Toronto	88,555	375,318	590,822	2,650,022	17,690	–	1,252,477	4,973,903	2,312,370	152,681	60,466	571,074
Toronto	331,422	1,250,074	514,407	10,425,176	407,739	160,166	1,790,698	5,741,589	12,235,918	1,465,615	179,508	1,132,581
Manitoba	7,664	873,070	50,945	9,863,497	6,395	–	1,486,846	2,904,415	2,366,640	436,345	16,318	464,603
Alberta and Saskatchewan	26,437	687,310	178,288	9,920,649	50,685	–	3,441,390	2,055,263	4,200,866	778,147	16,083	902,358
British Columbia	42,223	1,033,713	68,561	2,175,438	8,157	–	416,918	346,233	464,499	2,237,293	8,720	317,769
Dominion of Canada	735,383	6,216,962	2,410,024	45,286,640	534,153	339,262	9,028,572	21,046,981	23,080,841	7,112,207	532,370	4,834,110
April 1, 1919—												
Maritime Provinces	18,119	59,016	9,978	2,656,897	28,550	–	85,404	1,211,529	130,000	355,728	12,610	108,562
Quebec	180,606	641,370	697,197	7,556,804	32,641	203,707	602,373	2,680,518	926,291	1,223,380	120,294	1,254,858
Ontario—Toronto	198,033	114,596	298,343	2,404,616	18,275	–	790,358	2,749,356	1,106,060	147,000	169,444	245,825
Toronto	207,533	402,554	306,102	10,255,049	555,167	247,347	1,993,862	4,529,597	8,120,926	998,570	7,418	877,307
Manitoba	30,074	142,059	32,208	9,019,378	6,115	400	1,641,966	1,970,451	189,250	536,941	5,308	368,832
Alberta and Saskatchewan	6,179	88,763	55,181	9,451,268	68,841	–	3,311,297	2,413,386	2,209,996	621,628	11,059	703,270
British Columbia	47,869	441,895	40,943	1,895,158	1,100	–	342,183	2,282,238	811,955	573,033	13,216	321,754
Dominion of Canada	688,413	1,890,253	1,490,052	43,302,170	710,689	451,454	8,767,443	17,837,074	13,495,078	4,456,280	339,347	3,880,408
May 1, 1919—												
Maritime Provinces	52,889	24,183	20,628	2,618,832	42,392	–	63,125	872,250	285,400	248,430	965	62,682
Quebec	1,138,729	371,233	590,032	7,631,569	51,520	194,586	634,927	3,761,827	1,724,323	852,565	115,729	1,061,507
Ontario—Toronto	1,125,101	89,904	102,517	2,347,040	22,075	–	726,052	2,875,863	1,043,947	110,920	47,345	189,507
Toronto	601,838	180,044	209,337	8,725,067	677,755	42,220	2,162,053	2,400,318	6,499,278	644,064	121,186	571,866
Manitoba	78,106	46,011	14,734	3,321,878	86,502	6,150	1,038,871	1,804,937	177,769	198,126	17,192	251,374
Alberta and Saskatchewan	284,736	29,430	40,075	8,352,337	68,978	50	2,057,966	1,562,327	3,737,086	389,700	5,357	564,535
British Columbia	210,141	117,438	20,995	1,804,533	2,470	–	241,839	515,027	540,798	175,292	6,290	294,714
Dominion of Canada	3,491,540	858,243	1,004,318	34,801,256	951,692	243,006	6,924,833	13,882,549	14,008,601	2,619,097	313,764	2,996,185

TABLE XI.—Stocks of Storage Foods on Hand at Specified Dates, in Cold Storage and in Process of Cure—Concluded.

—	Eggs	Butter	Cheese	Beef			Pork			Mutton and Lamb	Oleomargarine	Poultry
				Fresh	Cured	In process of cure	Fresh	Cured	In process of cure			
	Doz.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
June 1, 1919—												
Maritime Provinces	208,906	28,749	11,778	1,782,665	32,638	–	25,974	813,674	120,000	92,668	5,678	54,417
Quebec	2,811,216	1,239,595	2,441,765	5,208,480	30,438	207,516	1,341,632	1,514,217	3,153,494	565,642	131,306	559,923
Ontario—Toronto	2,371,800	244,935	171,774	679,949	–	16,108	835,970	2,583,744	1,228,664	57,934	95,916	124,380
Toronto	1,403,656	431,353	257,166	6,614,042	505,468	180,883	2,372,455	4,776,983	8,749,710	742,828	101,282	521,669
Manitoba	136,296	58,065	10,649	2,975,576	–	34,672	723,859	148,236	286,898	188,021	749	172,500
Alberta and Saskatchewan	922,390	90,753	67,670	7,441,086	14,407	85	1,867,976	1,083,748	3,075,549	162,963	7,733	421,466
British Columbia	737,201	80,201	22,636	388,337	1,000	–	62,212	315,215	4,561	219,992	8,424	96,277
Dominion of Canada	8,591,465	2,173,651	2,983,438	25,090,135	583,951	439,264	7,230,078	11,235,817	16,618,876	2,030,048	351,118	1,950,632
July 1, 1919—												
Maritime Provinces	571,159	182,740	15,961	843,479	31,450	–	17,284	593,109	58,000	81,452	4,841	40,188
Quebec	3,823,273	5,465,409	7,843,413	3,157,035	3,800	189,433	630,413	1,098,670	2,783,095	510,259	218,095	328,716
Ontario—Toronto	3,330,870	1,263,548	943,225	711,870	–	–	746,542	1,969,824	2,684,002	46,331	55,780	96,996
Toronto	2,030,558	2,374,699	299,292	5,309,150	551,117	177,440	3,834,839	4,364,088	10,764,431	517,082	112,131	427,838
Manitoba	955,772	853,460	90,995	4,430,780	477	31,024	1,784,439	903,186	339,347	136,619	8,766	184,293
Alberta and Saskatchewan	1,317,536	700,215	70,891	2,399,174	16,829	75	1,537,128	1,329,067	2,654,268	116,067	6,988	362,843
British Columbia	1,073,024	525,679	79,123	654,980	500	–	222,451	459,985	288,109	190,337	5,977	166,754
Dominion of Canada	13,102,201	11,365,750	9,312,910	17,506,468	604,173	397,972	8,770,096	11,317,929	19,571,852	1,598,087	412,584	1,607,628
August 1, 1919—												
Maritime Provinces	238,250	586,345	81,818	380,877	40,458	–	10,484	351,662	400	73,346	5,481	28,504
Quebec	4,081,642	8,752,705	12,276,214	2,579,286	43,600	237,084	437,873	1,936,124	3,084,914	257,670	93,996	235,602
Ontario—Toronto	3,484,186	2,208,636	1,347,557	315,030	400	–	579,478	2,554,150	1,852,726	44,428	55,434	76,643
Toronto	2,214,377	4,233,398	568,697	4,756,000	409,078	215,849	4,240,051	2,820,202	10,798,798	283,947	145,913	255,743
Manitoba	1,240,294	2,618,219	278,997	2,803,624	1,439	300	1,705,105	2,225,834	158,624	153,726	21,026	136,896
Alberta and Saskatchewan	1,489,503	1,505,603	99,017	7,715,704	18,587	66	1,188,828	1,637,082	2,799,802	91,436	19,736	206,671
British Columbia	1,085,827	1,561,116	71,741	436,111	300	–	341,128	329,851	414,558	306,388	3,326	267,322
Dominion of Canada	13,804,076	21,530,022	14,697,041	19,046,692	514,462	453,263	8,502,947	11,854,905	19,109,822	1,191,121	344,942	1,201,384
September 1, 1919—												
Maritime Provinces	708,022	821,377	115,124	389,071	29,910	–	12,186	228,530	400	82,247	4,142	22,535
Quebec	4,169,370	10,177,592	17,288,466	3,010,115	41,544	227,396	340,995	2,267,776	2,474,337	267,722	90,755	198,197
Ontario—Toronto	3,093,473	2,359,161	2,740,408	563,954	–	45,749	709,749	3,338,491	2,263,381	222,082	99,349	54,749
Toronto	2,023,639	4,393,146	964,907	4,185,163	484,420	115,128	3,165,819	4,190,552	7,284,117	53,505	159,408	139,640
Manitoba	1,486,692	3,387,875	320,841	5,185,851	1,367	400	1,489,257	1,296,186	874,693	122,651	4,803	90,109
Alberta and Saskatchewan	1,408,407	2,030,012	358,503	4,852,779	400	30,512	699,150	1,452,352	2,485,349	114,966	8,263	169,880
British Columbia	1,032,306	2,174,606	314,849	510,711	638	–	342,620	387,437	439,456	242,899	6,588	228,094
Dominion of Canada	13,921,909	25,343,769	22,103,098	18,697,647	558,219	419,185	6,759,776	13,161,324	15,822,233	1,136,068	373,308	903,604

October 1, 1919—												
Maritime Provinces	646,447	671,203	179,786	374,491	60,635	–	28,585	119,129	29,200	76,030	2,324	28,056
Quebec	4,199,493	11,518,167	23,333,096	2,637,139	55,469	265,782	382,900	3,747,912	1,884,226	437,458	155,904	185,705
Ontario—Toronto	3,375,645	2,609,293	3,575,918	535,701	2,225	5,800	710,488	5,193,938	2,706,370	37,235	141,107	41,245
Toronto	1,794,535	4,187,416	1,492,071	4,633,075	476,662	119,165	2,923,146	4,038,666	12,123,281	601,174	119,660	86,352
Manitoba	1,484,471	3,199,123	323,129	7,453,580	280	10,806	1,400,861	1,314,324	575,900	160,318	15,851	50,102
Alberta and Saskatchewan	1,377,103	2,208,727	355,153	7,482,123	8,099	27,638	504,998	1,550,849	1,788,984	304,450	9,580	119,397
British Columbia	724,546	2,313,724	437,917	663,012	200	–	195,042	289,013	428,998	192,480	1,114	171,758
Dominion of Canada	13,602,240	26,767,653	29,697,070	23,779,121	603,570	429,191	6,146,020	16,253,831	19,536,959	1,899,145	445,540	691,615
November 1, 1919—												
Maritime Provinces	645,756	908,140	269,577	514,936	62,805	–	62,175	820,872	137,000	473,964	6,773	39,235
Quebec	3,125,202	9,950,613	21,576,892	2,998,627	77,524	188,470	640,318	2,779,733	2,230,447	789,734	174,532	338,624
Ontario—Toronto	2,002,149	2,482,410	3,491,595	924,778	18,212	–	1,115,794	4,051,275	1,623,849	63,220	90,848	121,316
Toronto	1,062,674	4,143,466	1,716,170	6,934,809	471,816	159,973	1,622,506	4,418,355	14,735,047	1,806,912	154,283	227,201
Manitoba	1,118,343	2,626,160	282,628	8,876,361	–	2,430	664,564	1,326,419	597,080	365,998	25,495	162,835
Alberta and Saskatchewan	939,594	1,390,270	584,449	6,319,830	709	29,553	382,426	518,703	962,335	318,344	11,463	252,120
British Columbia	619,496	1,273,010	362,617	1,500,855	7,049	7,627	56,234	199,894	277,037	244,552	76,495	150,628
Dominion of Canada	9,513,214	22,773,469	28,283,928	28,070,196	638,115	388,053	4,544,017	14,115,251	20,562,795	4,062,724	539,889	1,291,959
December 1, 1919—												
Maritime Provinces	439,670	758,125	268,970	1,606,700	46,821	1,000	268,167	1,050,667	283,000	1,098,218	4,873	152,331
Quebec	2,522,100	7,879,321	20,216,760	5,625,159	65,376	171,229	421,523	1,713,982	2,421,369	1,188,104	149,356	618,154
Ontario—Toronto	870,194	2,086,445	3,358,978	751,759	3,550	13,800	991,275	1,606,011	2,504,418	406,120	160,437	565,301
Toronto	815,117	3,354,003	2,245,606	9,383,186	121,290	159,303	1,415,745	1,502,359	10,068,775	3,550,594	135,963	684,566
Manitoba	776,877	2,006,446	252,176	14,985,462	–	5,493	713,602	649,292	574,999	511,714	26,915	516,657
Alberta and Saskatchewan	647,469	1,304,968	716,699	11,115,468	220	25,008	539,504	711,543	1,375,334	1,194,894	8,727	726,029
British Columbia	538,369	1,629,165	295,013	2,909,482	–	–	87,143	206,882	400,837	238,272	4,858	157,848
Dominion of Canada	6,609,796	19,018,473	27,354,202	46,467,216	237,257	375,833	4,436,959	7,440,736	17,628,732	8,187,916	491,129	3,420,886
January 1, 1920—												
Maritime Provinces	203,321	652,777	307,269	2,188,757	56,541	–	311,254	678,840	247,000	1,051,812	10,445	202,947
Quebec	1,293,172	6,612,547	20,755,258	5,741,722	47,350	126,353	558,587	506,247	727,045	988,595	188,253	1,432,786
Ontario—Toronto	435,797	1,433,023	3,388,476	2,117,493	895	20,426	766,672	670,895	1,643,015	185,511	156,452	848,814
Toronto	409,772	2,564,676	1,572,385	9,903,614	437,808	97,488	1,976,689	3,285,828	4,642,761	3,179,423	243,106	957,915
Manitoba	515,844	1,685,416	242,788	12,476,000	4,500	8,960	296,422	951,266	715,277	389,999	44,236	546,503
Alberta and Saskatchewan	404,936	1,275,183	683,860	13,473,496	–	18,796	644,415	740,430	2,059,587	1,175,773	57,194	741,381
British Columbia	272,381	1,241,794	254,003	3,706,147	200	–	226,900	194,138	609,392	211,499	26,548	252,588
Dominion of Canada	3,535,223	15,465,416	27,204,039	49,607,229	547,294	272,023	4,780,939	7,027,653	10,644,077	7,182,612	726,234	4,982,934

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds.

SHIPMENTS FROM PRINCE EDWARD ISLAND.

Oct 1–Dec. 31, 1916.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard, Pure	Lard Compound	Miscellaneous	Total	
To Quebec—										
Total from all points	–	–	–	–	1,400	580	–	–	1,980	
SHIPMENTS FROM QUEBEC.										
To Nova Scotia—										
From Montreal	12,959	–	1,984	248	15,099	12,426	120	170,386		
From other points	–	–	–	–	460	–	–	–		
Total	12,959	–	1,984	248	15,559	12,426	120	170,386	213,682	
To New Brunswick—										
From Montreal	264,303	–	48	23,668	177,769	103,267	6,641	164,094	739,790	
To Prince Edward Is.—										
From Montreal	12,110	–	–	–	–	250	–	3,320	15,680	
To Quebec—										
From Montreal	14,702	–	–	–	17,290	755	–	3,732		
From other points	–	–	–	–	84,360	50,205	–	4,505		
Total within Quebec	14,702	–	–	–	101,650	50,960	–	8,287	175,599	
To Ontario—										
From Montreal	585,471	100	3,298	1,000	22,370	35,650	44,972	648,936		
From other points	2,320	–	–	190	84,396	63,170	–	24,262		
Total	587,791	100	3,298	1,190	106,766	98,820	44,972	673,198	1,516,135	
To Manitoba—										
From Montreal	77,670	–	–	–	36,528	–	–	51,800	165,998	
To Saskatchewan—										
From Montreal	70,750	–	–	–	–	–	–	10,750	81,500	
To Alberta—										
From Montreal	–	–	–		–	–	–	35,560	35,560	
To British Columbia—										
Total from all points	–		–	–	–	–	–	84,580	84,580	
Total to other provinces	1,025,583	100	5,330	25,106	336,682	214,763	51,733	1,193,688	2,852,925	
To United States—										
From Montreal	41	–	306	4,440	20	200	–	1,129		
From other points	–	–	–	500	–	–	–	–		
Total	41	–	306	4,940	20	200	–	1,129	6,636	
Total Exports	41	–	306	4,940	20	200	–	1,129	6,636	
Total shipped out of Province	1,025,624	100	5,636	30,046	336,642	214,963	51,733	1,194,817	2,859,561	
SHIPMENTS FROM ONTARIO.										
To Nova Scotia—										
From Toronto	1,161,707	1,940	41,416	9,780	602,250	363,147	33,660	1,943,438		
From Hamilton	–	–	–	–	8,070	13,803	–	26,754		
From other points	–	–	–	–	2,604	–	2,870	–		
Total	1,161,707	1,940	41,416	9,780	612,924	376,950	36,530	1,970,192	4,211,439	
To New Brunswick—										
From Toronto	541,366	–	1,080	1,310	621,051	503,407	99,220	246,455		
From Hamilton	–	–	–	2,061	10,641	15,067	–	23,524		
From other points	–	–	–	–	106	–	–	–		
Total	541,366	–	1,080	3,371	631,798	518,474	99,220	269,979	2,065,288	
To Prince Edward Is.—										
From Toronto	–	–	–	–	18,840	51,120	50	2,000	72,010	
To Quebec—										
From Toronto	3,539,963	72,531	264,992	132,684	1,283,643	972,670	589,159	3,923,188		
From Hamilton	50	–	–	28,555	53,280	17,790	–	34,390		
From other points	–	–	–	–	103,300	102,048	25,840	381,678		
Total	3,540,013	72,531	264,992	161,239	1,440,223	1,092,508	614,999	4,339,256	11,525,761	
To Ontario—										
From Toronto	198,630	2,300	6,750	3,830	153,438	27,255	–	98,698		
Total within Ontario	198,630	2,300	6,750	3,830	153,438	27,255	–	98,698	490,901	
To Manitoba—										
From Toronto	–	–	273,205	15	–	–	–	41,898		
From other points	–	–	–	–	1,623	–	–	–		
Total	–	–	273,205	15	1,623	–	–	41,898	316,741	

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM ONTARIO.—Concluded.

Oct. 1-Dec. 31, 1916.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Saskatchewan—									
From Hamilton	–	–	–	–	121	–	–	–	121
To Alberta—									
From Toronto	20,540	–	–	–	74,090	–	–	660	95,290
To British Columbia—									
From Toronto	1,100	–	–	–	–	–	–	–	
From other points	–	–	–	–	62	–	–	20	
Total	1,100	–	–	–	62	–	–	20	1,182
Total to other provinces	5,264,726	74,471	580,693	174,405	2,779,681	2,039,052	750,799	6,624,005	18,287,832
To Newfoundland—									
From Toronto	–	–	–	–	320	–	–	370	
From Hamilton	–	–	–	–	249	–	–	–	
Total	–	–	–	–	569	–	–	370	939
To Overseas—									
From Toronto	3,091,422	–	–	–	23,811,108	–	–	613,219	
From other points	–	–	–	–	806,813	–	–	–	
Total	3,091,422	–	–	–	24,617,921	–	–	613,219	28,322,562
To United States—									
From Toronto	42,563	–	–	–	1,690	–	–	–	44,253
Total Exports	3,133,985	–	–	–	24,620,180	–	–	613,589	28,367,754
Total shipped out of Province	8,398,711	74,471	580,693	174,405	27,399,861	2,039,052	750,799	7,237,594	46,655,586

SHIPMENTS FROM MANITOBA.

To Nova Scotia—									
From Winnipeg	–	–	–	–	–	–	–	275	275
To New Brunswick—									
From Winnipeg	–	–	–	–	–	–	–	45,020	45,020
To Quebec—									
From Winnipeg	180,826	–	–	24,191	136,135	–	–	154,072	495,224
To Ontario—									
From Winnipeg	1,283,870	18,623	51,862	63,720	516,455	108,723	1,143	1,028,037	
From other points	–	–	–	–	140	–	–	–	
Total	1,283,870	18,623	51,862	63,720	516,595	108,723	1,143	1,028,037	3,072,573
To Manitoba—									
From Winnipeg	554,425	3,710	10,167	–	114,395	48,125	110	554,273	
Total within Manitoba	554,425	3,710	10,167	–	114,395	48,125	110	554,273	1,285,205
To Saskatchewan—									
From Winnipeg	356,335	16,147	44,135	3,414	374,984	163,879	217	176,381	1,135,492
To Alberta—									
From Winnipeg	–	–	–	–	88,379	–	–	1,041	89,420
To British Columbia—									
From Winnipeg	24,359	–	–	–	779	–	–	573	25,711
To Yukon—									
From Winnipeg	–	–	–	–	–	–	–	1,440	1,440
Total to other provinces	1,845,390	34,770	95,997	91,325	1,116,872	272,602	1,360	1,406,839	4,865,155
To Overseas—									
From Winnipeg	687,187	–	–	–	977,920	–	–	124,397	1,789,504
To United States—									
From Winnipeg	623,516	10,177	–	–	–	–	–	39,486	673,179
Total Exports	1,310,703	10,177	–	–	977,920	–	–	163,883	2,462,683
Total shipped out of Province	3,156,093	44,947	95,997	91,325	2,094,792	272,602	1,360	1,570,722	7,327,838

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM SASKATCHEWAN.

Oct. 1 Dec. 31, 1916.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard, Pure	Lard Compound	Miscellaneous	Total
To Ontario—									
Total from all points	–	–	–	–	–	–	–	15	15
To Alberta—									
Total from all points	1,015	–	–	195	295	580	–	16,437	18,522
Total to other provinces	1,015	–	–	195	295	580	–	16,452	19,537
Total shipped out of Province	1,015	–	–	195	295	580	–	16,452	19,537

SHIPMENTS FROM ALBERTA.

To Quebec—									
From Edmonton	295,610	–	–	137,234	–	–	–	24,114	
From other points	–	–	–	–	–	28,200	–	190,485	
Total	295,610	–	–	137,234	–	28,200	–	214,599	675,643
To Ontario—									
From Edmonton	–	–	–	132,501	117,996	–	–	–	
From other points	–	–	–	–	–	60,000	–	63,555	
Total	–	–	–	132,501	117,996	60,000	–	63,555	374,052
To Manitoba—									
From Edmonton	243,104	–	–	20,305	30,630	–	–	38	
From other points	–	–	–	–	160	–	–	117,775	
Total	243,104	–	–	20,305	30,790	–	–	117,813	412,012
To Saskatchewan—									
From Edmonton	210,629	611	10,829	34,345	233,293	222,880	55	88,211	
From other points	15,050	–	35	–	25,878	58,730	–	356,960	
Total	225,679	611	10,864	34,345	259,171	281,610	55	445,171	1,257,506
To Alberta—									
From Edmonton	41,381	1,296	614	1,690	12,773	5,601	–	6,428	
From other points	–	–	–	–	829	134	–		
Total within Alberta	41,381	1,296	614	1,690	13,602	5,735	–	6,428	70,746
To British Columbia—									
From Edmonton	1,305,141	13,136	35,182	121,716	696,866	262,431	–	215,577	
From other points	8,035	–	–	265	6,553	1,880	–	1,020,167	
Total	1,313,176	13,136	35,182	121,981	703,419	264,311	–	1,235,744	3,686,949
Total to other provinces	2,077,569	13,747	46,046	446,366	1,111,376	634,121	55	2,076,882	6,406,162
To Overseas—									
From Edmonton	403,915	–	–	–	357,169	–	–	–	761,084
To United States—									
From Edmonton	395,559	–	–	92,358	–	–	–	21,600	509,517
Total Exports	799,474	–	–	92,358	357,169	–	–	21,600	1,270,601
Total shipped out of Province	2,877,043	13,747	46,046	358,724	1,468,545	634,121	55	2,098,482	7,676,763

SHIPMENTS FROM BRITISH COLUMBIA.

To British Columbia—									
Total within British Columbia	19,650	497	–	8,742	3,108	–	9,243	–	41,240
To Yukon—									
Total from all points	–	–	–	–	1,704	–	5,596	–	7,300
Total shipped out of Province	–	–	–	–	1,704	–	5,596	–	7,300

NOTE.—Bills of Lading from Meat Inspection Branch, Department of Agriculture, show no shipments from Nova Scotia or New Brunswick.

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM PRINCE EDWARD ISLAND.

Calendar Year 1917	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Quebec—									
Total from all points	20,207	–	228,200	44,000	37,835	360	–	53,000	383,602
To Ontario—									
Total from all points	–	–	102,000	48,000	50	–	–	–	150,050
To Manitoba—									
Total from all points	–	–	227,600	–	–	–	–	–	227,600
To Alberta—									
Total from all points	–	–	24,100	–	–	–	–	–	24,100
To British Columbia—									
Total from all points	–	–	–	–	100	–	–	–	100
Total to other provinces	20,207	–	–	–	–	–	–	–	20,207
Total shipped out of Province	20,207	–	581,900	92,000	37,985	360	–	53,000	5,452

SHIPMENTS FROM QUEBEC.

To Nova Scotia—									
From Montreal	274,856	–	12,519	6,216	62,948	43,130	760	1,112,733	
From other points	–	–	–	–	330	16,970	–	–	
Total	274,856	–	12,519	6,216	63,278	60,100	760	1,112,733	1,530,462
To New Brunswick—									
From Montreal	362,050	–	–	133,686	161,10	103,063	5,716	757,041	1,522,658
To Prince Edward Island—									
From Montreal	4,920	–	–	–	9,819	28,386	–	70,491	113,616
To Quebec—									
From Montreal	–	–	–	–	4,791	1,245	–	12,385	
From other points	10,300	–	–	–	454,445	175,232	–	12,940	
Total within Quebec	10,300	–	–	–	459,236	176,477	–	25,325	671,338
To Ontario—									
From Montreal	816,042	38,713	105,393	29,766	64,569	22,846	9,946	1,908,603	
From other points	63,360	–	–	100	383,124	203,322	945	48,970	
Total	879,402	38,713	105,393	29,866	447,693	226,068	10,891	1,957,573	3,695,599
To Manitoba—									
From Montreal	–	–	–	–	26,300	–	–	259,860	286,160
To Saskatchewan—									
From Montreal	14	–	–	800	25	–	490	140,470	141,799
To Alberta—									
From Montreal	–	–	–	–	–	–	–	75,080	75,080
To British Columbia—									
From Montreal	–	–	–	–	–	–	–	658,410	658,410
Total to other provinces	1,521,242	38,713	117,912	170,568	708,217	417,617	17,857	5,031,657	8,023,784
To Overseas—									
From Montreal	1,792,963	55,259	32,718	–	1,190,673	960	–	44,518	
From other points	1,222,000	–	–	–	1,959,900	28,500	–	–	
Total	3,014,963	55,259	32,718	–	3,150,573	29,460	–	44,518	6,327,491
To United States—									
From Montreal	42,240	–	59,340	11,612	1,330	–	–	–	
From other points	–	–	–	–	–	–	–	600	
Total	42,240	–	59,340	11,612	1,330	–	–	600	115,122
Total Exports	3,057,203	55,259	92,058	11,612	3,151,903	29,460	–	45,118	6,442,613
Total shipped out of Province	4,578,445	93,972	209,970	182,180	3,860,120	447,077	17,857	5,076,776	14,466,390

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds.

SHIPMENTS FROM ONTARIO.

Calendar Year 1917.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Tota
To Nova Scotia—									
From Toronto	3,665,742	11,130	70,796	8,720	1,582,974	1,034,126	75,910	8,459,632	
From Hamilton	–	310	–	7,670	30,771	19,063	120	126,488	
From other points	–	–	–	–	1,854	–	300	–	
Total	3,665,742	11,440	70,796	16,390	1,615,599	1,053,189	76,330	8,586,120	15,095,606
To New Brunswick—									
From Toronto	1,417,753	3,850	9,960	101,762	2,026,235	1,257,768	352,260	1,216,005	
From Hamilton	–	–	–	–	23,417	14,464	–	27,889	
From other points	–	–	–	–	1,309	–	420	–	
Total	1,417,753	3,850	9,960	101,762	2,050,961	1,272,232	352,680	1,243,894	6,453,092
To Prince Edward Island—									
From Toronto	120	–	–	–	68,556	156,205	470	6,130	231,481
To Quebec—									
From Toronto	15,564,888	243,083	471,913	848,771	6,115,167	3,819,056	1,631,112	14,137,916	
From Hamilton	1,635	–	–	68,360	65,884	14,028	–	328,650	
From other points	–	–	–	38,204	208,561	92,675	855,207	1,371,374	
Total	15,565,523	243,083	471,913	955,335	6,389,612	3,925,759	2,486,319	15,837,940	45,876,484
To Ontario—									
From Toronto	548,141	6,120	16,830	2,521	850,842	62,825	5,640	455,540	
From Hamilton	–	–	–	–	25,015	–	–	–	
Total within Ontario	548,141	6,120	16,830	2,521	875,857	62,825	5,640	455,540	1,973,474
To Manitoba—									
From Toronto	20,030	–	213,045	–	3,976	–	–	43,860	
From other points	–	–	–	–	48,775	–	–	–	
Total	20,030	–	213,045	–	52,751	–	–	43,860	329,686
To Saskatchewan—									
From Hamilton	–	–	–	–	57	10	–	–	
From other points	–	–	–	–	–	–	900	40	
Total	–	–	–	–	57	10	900	40	1,007
To Alberta—									
From Toronto	–	–	46,230	–	–	–	–	–	46,230
To British Columbia—									
From Toronto	–	–	21,760	–	–	–	–	–	
From other points	–	–	–	–	85	–	–	–	
Total	–	–	21,760	–	85	–	–	–	21,845
Total to other provinces	20,670,168	258,373	833,704	1,073,487	10,177,621	6,407,395	2,916,699	25,717,984	68,055,431
To Overseas—									
From Toronto	14,379,457	–	–	–	117,064,893	612,174	–	2,063,406	
From Hamilton	–	–	–	–	2,047,257	–	–	–	
From other points	–	–	–	–	9,185,586	100,000	–	–	
Total	14,379,457	–	–	–	128,297,736	712,174	–	2,063,406	145,452,413
To United States—									
From Toronto	2,607,257	–	243,108	500	147,356	10	–	725,129	
From Hamilton	168,198	–	–	–	–	–	–	92,461	
From other points	20,039	–	–	11,112	1,103,093	–	–	9,649	
Total	2,795,494	–	243,108	11,612	1,250,449	10	–	827,239	5,127,912
To Newfoundland—									
Total from all points	–	–	–	–	14,350	140	–	–	14,490
Total Exports	17,174,951	–	243,108	11,612	129,562,535	712,324	–	2,890,285	150,594,815
Total shipped out of Province	37,845,119	258,373	1,076,812	1,085,099	139,740,156	7,119,719	2,916,699	28,608,269	218,650,246

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TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM MANITOBA.

Calendar Year 1917.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Nova Scotia—									
From Winnipeg	–	–	–	24,052	–	–	–	–	24,052
To New Brunswick—									
From Winnipeg	621,699	–	–	–	–	–	–	–	621,699
To Quebec—									
From Winnipeg	1,69 ,175	–	–	96,005	181,067	12,764	–	420,459	2,402,470
To Ontario—									
From Winnipeg	4,704,293	36,588	33,656	169,760	1,598,462	502,790	843	3,213,441	10,259,833
To Manitoba—									
From Winnipeg	39,407	–	142	84	37,741	4,271	–	4,047	
Total within Manitoba	39,407	–	142	84	37,741	4,271	–	4,047	85,692
To Saskatchewan—									
From Winnipeg	875,487	94,941	95,936	5,577	1,796,847	915,018	3,717	758,737	4,586,260
To Alberta—									
From Winnipeg	550	–	43,587	–	8,040	325	–	1,412	53,942
To British Columbia—									
From Winnipeg	29,301	–	–	247	76,271	2,222	28	1,059	
From other points	–	–	–	–	–	–	–	60,660	
Total	29,301	–	–	247	76,271	2,222	28	61,719	169,760
Total to other provinces	7,923,505	131,529	173,179	295,641	3,660,687	1,433,119	4,588	4,495,768	18,118,016
To Overseas—									
From Winnipeg	11,507,226	–	–	–	4,063,188	–	–	83,947	
From other points	128,289	–	–	–	–	–	–	–	
Total	11,635,515	–	–	–	4,063,188	–	–	83,947	15,782,650
To United States—									
From Winnipeg	8,135,988	–	–	–	424,442	100	–	1,057,533	9,618,063
Total Exports	19,771,503	–	–	–	4,487,630	100	–	1,141,480	25,400,713
Total shipped out of Province	27,695,008	131,529	173,179	295,641	8,148,317	1,433,219	4,588	5,637,248	43,518,729

SHIPMENTS FROM SASKATCHEWAN.

To New Brunswick—									
Total from all points	–	–	–	–	–	–	–	100	100
To Quebec—									
Total from all points	45,952	–	–	68,632	74,332	–	–	–	188,916
To Ontario—									
Total from all points	723,300	–	–	–	33,810	–	–	–	757,110
To Manitoba—									
Total from all points	419,286	–	–	–	–	–	–	–	419,286
To Saskatchewan—									
Total within Saskatchewan	–	–	–	–	80,132	–	–	6,564	86,696
To Alberta—									
Total from all points	280	–	200	175	235	22,200	–	464,310	487,400
To British Columbia—									
Total from all points	–	–	–	–	23,978	1,090	–	3,120	28,128
Total to other provinces	1,188,818	–	200	68,807	132,355	23,290	–	467,530	1,881,000
To Overseas—									
Total from all points	672,796	–	–	–	81,061	–	–	36,453	790,310
To United States.									
Total from all points	2,868,821	–	–	–	313	–	–	–	2,869,134
Total Exports	–	–	–	–	81,374	–	–	36,453	3,659,444
Total shipped out of Province	4,730,435	–	200	68,807	213,729	23,290	–	503,983	5,540,444

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds.—Continued.

SHIPMENTS FROM ALBERTA.

Calendar Year, 1917	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Nova Scotia—									
Total from all points	–	–	–	–	–	–	–	24,035	24,035
To New Brunswick—									
From Edmonton	–	–	–	–	530	460	–	–	990
To Quebec—									
From Edmonton	55	–	–	838,763	241,959	24,826	–	38,733	
From other points	–	–	–	–	–	–	–	176,005	
Total	55	–	–	838,763	241,959	24,826	–	214,738	1,320,341
To Ontario—									
From Edmonton	51,962	–	–	219,706	304,117	360,165	–	150,387	
From other points	–	–	–	–	157,480	120,290	–	80,661	
Total	51,962	–	–	219,706	461,597	480,455	–	231,048	1,444,768
To Manitoba—									
From Edmonton	56,005	2,060	1,677	53,219	120,860	24,482	204	99,162	
From other points	–	–	–	–	520	–	–	63,895	
Total	56,005	2,060	1,677	53,219	121,380	24,482	204	163,057	421,084
To Saskatchewan—									
From Edmonton	375,622	6,433	12,085	9,421	546,261	298,693	65	70,596	
From other points	20,301	–	2,680	640	38,989	27,630	–	1,178,920	
Total	395,923	6,433	14,765	10,061	585,250	326,323	65	1,249,516	2,588,336
To Alberta—									
From Edmonton	187,946	796	3,679	2,713	93,921	72,439	–	16,152	
From other points	–	–	–	–	–	–	–	9,585	
Total within Alberta	187,946	796	3,679	2,713	93,921	72,439	–	25,737	387,231
To British Columbia—									
From Edmonton	3,945,817	24,870	99,228	283,061	2,075,165	918,158	1,100	795,040	
From other points	18,290	–	280	812	113,721	5,000	–	4,238,303	
Total	3,964,107	24,870	99,508	383,873	2,188,886	923,158	1,100	5,033,343	12,618,845
Total to other provinces	4,468,052	33,363	115,950	1,504,622	3,599,602	1,779,704	1,369	6,915,737	18,418,399
To United States—									
From Edmonton	3,353,788	–	–	–	141,168	60,125	–	205,251	
From other points	2,958,204	–	–	–	–	–	–	30,420	
Total	6,311,992	–	–	–	141,168	60,125	–	235,671	6,748,956
To Overseas—									
From Edmonton	2,755,941	–	–	115,258	1,708,466	–	–	–	
From other points	5,972,364	–	–	–	1,376,458	417,308	–	42,334	
Total	8,728,305	–	–	115,258	3,084,924	417,308	–	42,334	12,388,129
Total Exports	15,040,297	–	–	115,258	3,226,092	477,433	–	278,005	19,137,085
Total shipped out of Province	19,508,349	33,363	115,950	1,619,880	6,825,694	2,257,237	1,369	7,193,742	37,555,484

SHIPMENTS FROM BRITISH COLUMBIA.

To Yukon—									
Total from all points	–	–	–	200	22,152	1,730	–	105,994	130,076
Total to other provinces	–	–	–	200	22,152	1,730	–	105,994	130,076
To Overseas—									
Total from all points	–	–	–	–	70,500	–	–	–	70,500
To United States—									
Total from all points	–	–	–	–	2,279	–	–	–	2,279
Total Exports	–	–	–	–	72,279	–	–	–	72,279
Total shipped out of Province	–	–	–	200	94,431	1,730	–	105,994	202,355

NOTE.—Bills of Lading from Meat Inspection Branch, Department of Agriculture, show no shipments from Nova Scotia or New Brunswick.

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM PRINCE EDWARD ISLAND.

Calendar Year 1918	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Prince Edward Island—									
Total within Prince Edward Island	–	–	800	–	–	–	–	–	800
To Quebec—									
Total from all points	27,700	–	20,460	58,100	18,380	–	–	–	124,640
To Ontario—									
Total from all points	19,654	–	29,000	–	–	–	–	3,052	51,706
To Manitoba—									
Total from all points	–	–	241,900	–	–	–	–	–	241,900
Total to other provinces	47,354	–	291,360	58,100	18,380	–	–	3,052	418,246
Total shipped out of Province	47,354	–	291,360	58,100	18,380	–	–	3,052	418,246

SHIPMENTS FROM QUEBEC

To Nova Scotia—									
From Montreal	136,782	–	1,085	7,398	31,545	23,066	–	570,747	
From other points	–	–	–	–	–	5,720	–	–	
Total	136,782	–	1,085	7,398	31,545	28,786	–	570,747	776,343
To New Brunswick—									
From Montreal	171,056	–	44,732	44,484	82,152	48,437	60	437,687	828,608
To Prince Edward Island—									
From Montreal	–	–	–	–	–	1,300	–	190	1,490
To Quebec—									
From Montreal	707	–	3,032	770	143,746	54,996	240	25,188	
From other points	–	–	–	–	364,226	106,682	9,975	18,820	
Total within Quebec	707	–	3,032	770	507,972	161,678	10,215	44,008	728,382
To Ontario—									
From Montreal	4,463,230	138,258	8,744	50,275	339,278	6,813	145,264	3,024,604	
From other points	–	–	20,036	120	343,711	125,258	875	53,027	
Total	4,463,230	138,258	28,780	50,395	682,989	132,071	146,139	3,077,631	8,719,493
To Manitoba—									
From Montreal	–	–	24,309	–	–	66,934	–	688,200	779,443
To Saskatchewan—									
From Montreal	–	–	–	200	–	–	23,199	199,110	222,509
To Alberta—									
From Montreal	–	–	–	–	–	–	–	272,640	272,640
British Columbia—									
From Montreal	424	–	–	–	–	31,666	–	791,010	823,100
Total to other provinces	4,771,492	138,258	98,906	102,477	796,686	309,194	169,398	6,037,215	12,423,626
To Overseas—									
From Montreal	11,322,564	–	–	–	10,257,337	–	–	666,602	
From other points	328,608	–	–	–	5,887,469	–	–	14,400	
Total	11,651,172	–	–	–	16,144,806	–	–	681,002	28,476,980
To United States—									
From Montreal	1,449,459	565,894	68,827	2,900	10	–	–	96,208	
From other points	–	–	–	980	–	–	–	–	
Total	1,449,459	565,894	68,827	3,880	10	–	–	96,208	2,184,278
Total Exports	13,100,631	565,894	68,827	3,880	16,144,816	–	–	777,210	30,661,258
Total shipped out of Province	17,872,123	704,152	167,733	106,357	16,941,502	309,194	169,398	6,814,425	43,084,884

TABLE XII. Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM ONTARIO.

Calendar Year, 1918.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total	
To Nova Scotia—										
From Toronto.	2,527,160	5,705	19,880	6,485	1,517,287	896,732	367,911	6,701,644		
From Hamilton	–	–	–	–	3,119	–	–	1,569		
From other points.	–	–	–	–	1,918	–	–	–		
Total	2,527,160	5,705	19,880	6,485	1,522,324	896,732	367,911	6,703,213		12,049,410
To New Brunswick—										
From Toronto	1,430,856	2,360	14,852	8,290	2,119,245	1,258,304	530,002	2,126,444		
From Hamilton	–	–	–	412	7,154	–	–	3,130		
From other points.	–	–	–	–	3,008	–	400	37		
Total	1,430,856	2,360	14,852	8,702	2,129,407	1,258,304	530,402	2,129,611		7,504,494
To Prince Edward Island—										
From Toronto		–	–	–	38,530	119,620	8,480	16,125		182,755
To Quebec—										
From Toronto	16,559,979	116,460	232,150	181,813	17,129,580	4,007,065	2,810,832	15,851,222		
From Hamilton	–	–	–	20,944	23,367	2,996	646	170,819		
From other points.	9,339	66	53	27,668	250,878	27,337	10,320	848,808		
Total	16,569,318	116,526	232,203	230,425	17,403,825	4,037,398	2,821,798	16,870,849		58,282,342
To Ontario—										
From Toronto	506,666	810	50,900	890	237,136	482,610	737,167	899,517		
From Hamilton	–	–	–	–	230,835	–	–	85,348		
From other points.	50	–	–	–	41,725	240,463	240	34,170		
Total within Ont.	506,716	810	50,900	890	509,696	723,073	737,407	1,019,035		3,548,527
To Saskatchewan—										
From Hamilton	–	–	–	–	31	–	–	–		31
To Manitoba—										
From Toronto	–	–	115,360	–	524	–	–	60		
From other points.	229,146	–	–	–	614	–	–	–		
Total	229,146	–	115,360	–	1,138	–	–	60		345,704
To Alberta—										
From Toronto	–	–	20,830	–	23,980	–	–	–		44,810
To British Columbia—										
From Toronto	–	–	–	–	–	1,300	470	390		
From other points.	–	–	–	200	235	40	60	–		
Total	–	–	–	200	235	1,340	530	390		2,695
Total to other provinces	20,756,480	124,591	403,125	245,812	21,119,470	6,313,394	3,729,121	25,720,248		78,412,241
To Overseas—										
From Toronto	55,377,947	–	–	–	129,539,267	67,440	71,949	5,253,915		
From Hamilton	670,084	–	–	–	3,798,696	–	–	–		
From other points.	2,785,622	–	–	1,100	23,143,961	500	–	217,821		
Total	58,833,653	–	–	1,100	156,481,924	67,940	71,949	5,471,736		220,928,302
To United States—										
From Toronto	7,162,890	381,310	563,080	42,080	1,079,049	88	12,869	1,799,391		
From Hamilton	–	–	–	–	565,904	–	–	39,484		
From other points.	427,459	–	49,737	22,404	65,980	–	–	193,400		
Total	7,590,349	381,310	612,817	64,484	1,710,933	88	12,869	2,032,275		12,405,125
To Newfoundland										
From Toronto	–	–	–	–	5,250	–	–	–		
From Hamilton	–	–	–	–	203	–	–	–		
Total	–	–	–	–	5,453	–	–	–		5,453
Total Exports	66,424,002	381,310	612,817	65,584	158,198,310	68,028	84,818	7,504,011		233,338,880
Total shipped out of Province	87,180,482	505,901	1,015,942	311,396	179,317,780	6,381,422	3,813,939	33,224,259		311,751,121

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TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM MANITOBA.

Calendar Year 1918	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Nova Scotia—									
From Winnipeg	66,383	–	–	23,851	–	133	–	477	90,844
To New Brunswick—									
From Winnipeg	837,755	–	–	–	–	–	–	35,382	873,137
To Quebec—									
From Winnipeg	2,230,523	–	–	266,845	298,258	29,174	38,720	408,080	3,271,600
To Ontario—									
From Winnipeg	9,762,653	107,160	65,790	48,520	4,791,219	2,176,190	46,803	4,791,864	21,790,199
To Manitoba—									
From Winnipeg	54,773	1,103	230	167	4,448	2,419	67	30,678	
Total within Manitoba	54,773	1,103	230	167	4,448	2,419	67	30,678	93,885
To Saskatchewan—									
From Winnipeg	1,159,834	33,574	124,582	796	868,178	1,495,600	56,066	905,835	4,644,465
To Alberta—									
From Winnipeg	23,668	–	90	–	103,822	61,086	863	103,240	292,769
To British Columbia—									
From Winnipeg	224	–	–	–	24,181	100,010	75	1,046	125,536
Total to other provinces	14,081,040	140,734	190,462	340,012	6,085,658	3,862,193	142,527	6,245,924	31,088,550
To Overseas—									
From Winnipeg	19,076,719	–	–	–	10,713,706	–	36,041	239,984	30,066,400
To United States—									
From Winnipeg	7,515,580	5,191	–	–	2,006,201	–	–	1,122,176	10,649,148
Total exports	26,592,299	5,191	–	–	12,719,907	–	36,041	1,362,160	40,715,598
Total shipped out of province	40,673,339	145,925	190,462	340,012	18,805,565	3,862,193	178,568	7,608,084	71,804,148

SHIPMENTS FROM SASKATCHEWAN.

To Nova Scotia—									
Total from all points	–	–	–	–	–	–	–	1,535	1,535
To New Brunswick—									
Total from all points	72,656	–	–	–	–	–	–	–	72,656
To Quebec—									
Total from all points	13,200	–	–	85,250	37,950	–	–	–	136,400
To Ontario—									
Total from all points	868,910	–	–	55,510	1,079,690	–	–	336,127	2,340,237
To Manitoba—									
Total from all points	3,131,157	–	–	–	–	–	–	31,744	3,162,901
To Saskatchewan—									
Total within Saskatchewan	60,659	–	–	–	27,182	–	–	–	87,841
To Alberta—									
Total from all points	–	–	–	–	110	24,680	–	695,055	719,845
To British Columbia—									
Total from all points	–	–	–	–	–	–	–	24,639	24,639
Total to other provinces	4,085,923	–	–	140,760	1,117,750	24,680	–	1,089,100	6,458,213
To Overseas—									
Total from all points	3,582,751	–	–	–	3,120,160	–	–	22,948	6,725,859
To United States—									
Total from all points	4,099,255	–	–	–	214,310	–	–	69,635	4,383,200
Total exports	7,682,006	–	–	–	3,334,470	–	–	92,583	11,109,059
Total shipped out of province	11,767,929	–	–	140,760	4,452,220	24,680	–	1,181,683	17,567,272

TABLE XII. Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM ALBERTA

Calendar Year 1918	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Nova Scotia—									
Total from all points	–	–	–	–	–	–	–	24,245	24,245
To Quebec—									
From Edmonton	648,057	–	–	175,410	60,000	–	–	–	
From other points	–	–	–	–	360,084	–	43,360	591,883	
Total	648,057	–	–	175,410	420,084	–	43,360	591,883	1,878,794
To Ontario—									
From Edmonton	–	–	–	55,257	245,659	60,315	–	54,471	
From other points	200,430	–	–	–	645,856	120,415	–	397,578	
Total	200,430	–	–	55,257	891,515	180,730	–	452,049	1,779,981
To Manitoba—									
Total from all points	20	–	–	–	60,000	–	–	100	60,120
To Saskatchewan—									
From Edmonton	306,286	505	23,725	2,420	168,105	105,169	4,036	99,647	
From other points	109,845	–	150	–	6,169	38,918	–	2,249,400	
Total	416,131	505	23,875	2,420	174,274	144,087	4,036	2,349,047	3,114,375
To Alberta—									
From Edmonton	43,907	899	785	333	70,965	2,439	101	341,331	
From other points	112	–	10,872	–	30,365	–	–	92,157	
Total within Alberta	44,019	899	11,657	333	101,330	2,439	101	433,488	594,266
To British Columbia—									
From Edmonton	618,446	8,810	26,394	32,456	478,206	331,165	13,463	561,419	
From other points	273,038	–	–	14,648	196,349	670	–	2,948,039	
Total	891,484	8,810	26,394	47,104	674,555	331,835	13,463	3,509,458	5,503,103
Total to other provinces	2,156,122	9,315	50,269	280,191	2,220,428	656,652	60,859	6,926,782	12,360,618
To Overseas—									
From Edmonton	13,394,226	–	–	–	12,963,545	30,688	–	1,238,091	
From other points	18,630,450	–	–	–	4,064,566	112,000	–	64,242	
Total	32,024,676	–	–	–	17,028,111	142,688	–	1,302,333	50,497,808
To United States—									
From Edmonton	1,709,419	–	–	–	454,118	–	–	508,020	
From other points	2,347,310	–	–	–	35,000	–	–	120,804	
Total	4,056,729	–	–	–	489,118	–	–	628,824	5,174,671
Total exports	36,081,405	–	–	–	17,517,229	142,688	–	1,931,157	55,672,479
Total shipped out of province	38,237,527	9,315	50,269	280,191	19,737,657	799,340	60,859	8,857,939	68,033,097

SHIPMENTS FROM BRITISH COLUMBIA.

To Quebec—									
Total from all points	–	–	–	–	90,000	–	–	–	90,000
Total to other provinces	–	–	–	–	90,000	–	–	–	90,000
To Overseas—									
Total from all points	1,892,027	–	–	–	–	–	–	–	1,892,027
To United States—									
Total from all points	–	–	–	–	7,301	17,233	–	25,013	49,547
Total Exports	1,892,027	–	–	–	7,301	17,233	–	25,013	1,941,574
Total shipped out of province	1,892,027	–	–	–	97,301	17,233	–	25,013	2,031,574

NOTE.—Bills of lading from Meat Inspection Branch, Department of Agriculture, show no shipments from Nova Scotia or New Brunswick.

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TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM PRINCE EDWARD ISLAND.

Calendar Year 1919.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Prince Edward Island—									
From Charlottetown	–	–	–	900	115,808	–	–	–	116,708
To Nova Scotia—									
Total from all points	–	–	–	2,000	5,000	–	–	–	7,000
To New Brunswick—									
Total from all points	–	–	–	585	32,042	–	–	–	32,627
To Quebec—									
Total from all points	–	–	71,200	24,600	293,741	–	–	11,415	400,956
To Ontario—									
Total from all points	–	–	64,900	–	57,231	–	–	–	122,131
Total to other provinces	–	–	136,100	27,185	388,014	–	–	11,415	562,714
To United States—									
Total from all points	–	–	–	15,000	–	–	–	–	15,000
Total exports	–	–	–	15,000	–	–	–	–	15,000
Total shipped out of province	–	–	136,100	42,185	388,014	–	–	11,415	577,714

SHIPMENTS FROM NEW BRUNSWICK.

To Oversens—									
Total from all points	168,645	–	–	–	724,212	–	–	–	892,857
Total exports	168,645	–	–	–	724,212	–	–	–	892,857
Total shipped out of province	168,645	–	–	–	724,212	–	–	–	892,857

SHIPMENTS FROM QUEBEC.

To Prince Edward Island—									
From Montreal	–	–	–	–	–	–	–	265,030	265,030
To Nova Scotia—									
From Montreal	84,589	809	8,791	6,940	29,064	31,127	320	635,496	
From other points	–	–	–	–	–	700	–	–	
Total	84,589	809	8,791	6,940	29,064	31,827	320	635,496	797,836
To New Brunswick—									
From Montreal	268,844	–	52	115,844	66,633	80,357	3,240	676,344	1,211,314
To Quebec—									
From Montreal	290	–	–	35,000	44,301	–	–	118	
From other points	2,734	–	–	–	278,501	149,769	8,080	51,479	
Total within Quebec	3,024	–	–	35,000	322,802	149,769	8,080	51,597	570,272
To Ontario—									
From Montreal	575,605	118,217	50,294	86,361	190,712	155,633	52,211	4,107,350	
From other points	250	–	–	6,830	202,502	124,472	3,595	41,521	
Total	575,855	118,217	50,294	93,191	393,214	280,105	55,806	4,149,071	5,715,753
To Manitoba—									
From Montreal	859	–	–	–	–	3,475	26,179	977,257	1,007,770
To Saskatchewan—									
From Montreal	–	–	–	–	–	–	–	439,290	439,290
To Alberta—									
From Montreal	–	–	–	–	–	120	–	490,465	490,585

TABLE XII. Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM QUEBEC—Concluded.

Calendar year 1919	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To British Columbia—									
From Montreal	–	–	–	–	–	–	81,664	1,001,917	1,083,581
Total to other provinces	930,147	119,026	59,137	215,975	488,911	395,884	167,209	8,634,870	11,011,159
To Overseas—									
From Montreal	6,260,578	8,362	–	–	11,274,367	50,961	–	816,509	
From other points	657,577	3,314	–	21,887	8,389,019	29,502	17,550	34,621	
Total	6,918,155	11,676		21,887	19,663,386	80,463	17,550	851,130	27,564,247
To United States—									
From Montreal	1,759,999	3,126,648	528,217	64,130	169,434	245,467	–	214,281	
From other points	315	–	30,379	–	44,169	68,109	–	165	
Total	1,760,314	3,126,648	558,596	64,130	213,603	313,576	–	214,446	6,251,313
Total exports	8,678,469	3,138,324	558,596	86,017	19,876,989	394,039	17,550	1,065,576	33,815,560
Total shipped out of province	9,608,616	3,257,350	617,733	301,992	20,365,900	789,923	184,759	9,700,446	44,826,719

SHIPMENTS FROM ONTARIO.

To Prince Edward Island—									
From Toronto	35,030	43	19,990	95	48,295	349,422	65,215	153,628	671,718
To Nova Scotia—									
From Toronto	3,031,724	6,450	148,310	13,516	414,599	932,053	371,932	6,121,887	
From other points	–	–	–	–	57,586	–	–	45,060	
Total	3,031,724	6,450	148,310	13,516	472,185	932,053	371,932	6,166,947	11,143,117
To New Brunswick—									
From Toronto	1,376,715	3,230	11,980	14,426	777,067	1,901,923	721,482	2,814,240	
From other points	333	–	–	–	3,823	–	1,380	332	
Total	1,377,048	3,230	11,980	14,426	780,890	1,901,923	722,862	2,814,572	7,626,931
To Quebec—									
From Toronto	13,857,997	92,026	431,070	274,845	2,002,609	3,949,977	4,037,440	31,939,463	
From Hamilton	1,000	–	700	32,341	31,005	254,681	2,210	17,566	
From other points	5,877	–	627	69,615	248,062	41,046	16,589	714,370	
Total	13,864,874	92,026	432,397	376,801	2,281,676	4,245,704	4,056,239	32,671,399	58,021,116
To Ontario—									
From Toronto	504,923	3,760	16,310	27,083	91,770	86,775	117,523	303,726	
From Hamilton	–	–	–	16,165	276,550	–	–	5,527	
From other points	17,879	–	1,530	3,400	9,587	3,141	41,360	110,292	
Total within Ont.	522,802	3,760	17,840	46,648	377,907	89,916	158,883	419,545	1,637,301
To Manitoba—									
From Toronto	–	–	71,113	15,474	32,138	–	3,350	94,682	
From other points	–	–	–	1,035	34,169	45	–		
Total	–	–	71,113	16,509	66,307	45	3,350	94,682	252,006
To Saskatchewan—									
Total from all points	–	–	–	–	–	–	40	–	40
To Alberta—									
From Toronto	–	–	–	–	119	45	60	31,979	
From other points	–	–	–	–	–	–	60	–	
Total	–	–	–	–	119	45	120	31,979	32,263
To British Columbia—									
From Toronto	120	–	–	–	680	470	140	870	
From other points	–	–	–	–	255	–	–	32,100	
Total	120	–	–	–	935	470	140	32,970	34,635
Total to other provinces	18,308,796	101,749	683,790	421,347	3,650,407	7,429,662	5,219,898	41,966,177	77,781,826
To Newfoundland—									
From Toronto	4,085	–	–	100	4,345	–	–	11,670	20,200

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM ONTARIO—Concluded.

Calendar Year, 1919.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Overseas—									
From Toronto	25,256,414	80,893	413,493	148,239	120,049,095	5,179,884	522,212	7,571,369	
From Hamilton	262,284	–	–	–	7,213,065	186,897	–	105,355	
From other points	1,506,658	176,857	–	19,688	23,603,650	874,131	20	87,696	
Total	27,025,356	257,750	413,493	167,927	150,865,810	6,240,912	522,232	7,764,420	193,257,900
To United States—									
From Toronto	13,523,941	991,396	3,303,422	473,300	3,144,055	1,985,612	378,590	1,993,833	
From Hamilton	377,190	57,224	3,738	2,134	33,389	356,334	–	149,075	
From other points	37,007	–	–	580	177,415	672,357	–	1,545	
Total	13,938,138	1,048,620	3,307,160	476,014	3,354,859	3,014,303	378,590	2,144,453	27,662,137
Total exports	40,967,579	1,306,370	3,720,653	644,041	154,225,014	9,255,215	900,822	9,920,543	220,940,237
Total shipped out of province	59,276,375	1,408,119	4,404,443	1,065,388	157,875,421	16,684,877	6,120,720	51,886,720	298,722,063

SHIPMENTS FROM MANITOBA.

To Nova Scotia—									
From Winnipeg	32,472	–	–	–	–	–	–	277	32,749
To New Brunswick—									
From Winnipeg	–	–	–	–	194,781	–	–	225	195,006
To Quebec—									
From Winnipeg	821,309	92	72	–	74,362	182	1,460	172,734	1,070,211
To Ontario—									
From Winnipeg	11,138,269	111,424	57,084	167,989	2,205,425	598,011	257,452	4,110,120	18,645,774
To Manitoba—									
From Winnipeg	10,997	124	726	72	3,769	4,857	361	13,596	
From other points	3,622	–	–	–	716	894	13	6,487	
Total within Manitoba	14,619	124	726	72	4,485	5,751	374	20,083	46,234
To Saskatchewan—									
From Winnipeg	2,106,984	77,971	140,186	8,604	280,188	822,662	88,205	1,290,426	4,815,226
To Alberta—									
From Winnipeg	66,173	–	–	–	132,552	179,054	26,124	177,199	581,102
To British Columbia—									
From Winnipeg	–	381	142	–	35,776	34,018	60,811	332,366	463,494
Total to other provinces	14,165,207	189,868	197,484	176,593	2,923,084	1,633,927	434,052	6,083,347	25,803,562
To Overseas—									
From Winnipeg	9,350,518	91,176	–	64,908	13,442,140	492,402	189,768	251,325	23,882,237
To United States—									
From Winnipeg	10,706,286	12,533	–	89,757	2,560,988	8,770	171,455	870,248	14,420,037
Total Exports	20,056,804	103,709	–	154,665	16,003,128	501,172	361,223	1,121,573	38,302,274
Total shipped out of Province	34,222,011	293,577	197,484	331,258	18,926,212	2,135,099	795,275	7,204,920	64,105,836

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds—Continued.

SHIPMENTS FROM SASKATCHEWAN.

Calendar Year 1919.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Nova Scotia—									
Total from all points	–	–	–	–	–	–	–	150	150
To New Brunswick—									
Total from all points	–	–	–	–	–	–	–	270	270
To Quebec—									
Total from all points	22,207	–	–	25,599	27,842	–	–	–	75,648
To Ontario—									
Total from all points	1,390,324	304,013	–	55,835	272,255	330	10,325	65,246	2,098,328
To Manitoba—									
Total from all points	3,764,282	–	–	–	106,455	–	–	224,804	4,095,541
To Saskatchewan—									
Total from all points within Saskatchewan	42,237	–	–	–	58,109	10,755	140	–	111,241
To Alberta—									
Total from all points	90,837	36,547	265	20,294	150,420	24,795	1,435	297,995	622,588
To British Columbia—									
Total from all points	22,465	–	–	–	49,793	2,420	60	4,645	79,383
Total to other provinces	5,290,115	340,560	265	101,728	606,765	27,545	11,820	593,110	6,971,908
To Overseas—									
Total from all points	3,216,924	174,984	–	–	6,531,574	146,233	72,860	84,671	10,227,246
To United States—									
Total from all points	2,404,096	58,742	–	23,655	538,952	–	50	131,406	3,156,901
Total Exports	5,621,020	233,726	–	23,655	7,070,526	146,233	72,910	216,077	13,384,147
Total shipped out of Province	10,911,135	574,286	265	125,383	7,677,291	173,778	84,730	809,187	20,356,055

SHIPMENTS FROM ALBERTA.

To Nova Scotia—									
Total from all points	–	–	–	–	125	–	–	205,422	205,547
To New Brunswick—									
Total from all points	287,666	–	–	–	–	–	–	56,453	344,119
To Quebec—									
From Edmonton	–	–	–	–	264,638	–	–	30,011	
From other points	275,993	–	–	–	24,000	–	41,901	785,692	
Total	275,993	–	–	–	288,638	–	41,901	815,703	1,422,235
To Ontario—									
From Edmonton	–	–	–	20,675	–	–	–	–	
From other points	–	–	–	–	30,000	–	39,721	259,949	
Total	–	–	–	20,675	30,000	–	39,721	259,949	350,345
To Manitoba—									
From Edmonton	–	–	–	–	–	60,325	–	–	
From other points	–	–	–	–	30,000	–	–	–	
Total	–	–	–	–	30,000	60,325	–	–	90,325

TABLE XII.—Statement of Interprovincial and Markets Shipments of Meats in Detail by Districts of Origin and Destination, Oct. 1 to Dec. 31, 1916, and Calendar Years 1917, 1918 and 1919, in pounds Continued.

SHIPMENTS FROM ALBERTA—Concluded.

Calendar Year 1919.	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
To Saskatchewan—									
From Edmonton..	36,992	14,450	2,846	631	25,688	69,065	850	115,886	
From other points	39,602	–	–	65	33,076	48,750	50	1,707,456	
Total.....	76,594	14,450	2,846	696	58,764	117,815	900	1,823,342	2,095,407
To Alberta—									
From Edmonton..	3,858	1,687	361	219	72,044	2,675	114	8,920	
From other points	885	15,831	42	–	87,246	912	–	1,395	
Total.....	4,743	17,518	403	219	159,290	3,587	114	10,315	196,189
To British Columbia—									
From Edmonton..	949,596	28,035	31,706	10,727	69,433	221,742	10,175	1,468,189	
From other points	34,238	29,609	52	147	86,279	8,930	3,173	4,008,621	
Total.....	983,834	57,644	31,758	10,874	155,712	230,672	13,348	5,476,810	6,960,652
Total to other provinces	1,624,087	72,094	34,604	32,245	563,239	408,812	95,870	8,637,679	11,468,630
To Overseas—									
From Edmonton..	2,041,041	–	–	–	4,740,321	–	–	149,722	
From other points	9,052,512	157,279	112,924	102,126	3,071,827	113,099	–	395,891	
Total.....	11,093,553	157,279	112,924	102,126	7,812,148	113,099	–	545,613	19,936,742
To United States—									
From Edmonton..	5,750,254	42,552	–	–	542,541	77,258	276,700	443,408	
From other points	7,277,064	–	–	–	1,815,338	–	–	–	
Total.....	13,027,318	42,552	–	–	2,357,879	77,258	276,700	443,408	16,225,115
Total Exports.....	24,120,871	199,831	112,924	102,126	10,170,027	190,357	276,700	989,021	36,161,857
Total shipped out of Province.....	25,744,958	271,925	147,528	134,371	10,733,266	599,169	372,570	9,626,700	47,630,487

SHIPMENTS FROM BRITISH COLUMBIA.

To Ontario—									
Total from all points.....	–	–	–	–	24,000	–	–	–	24,000
To Alberta—									
Total from all points.....	329,563	–	–	–	–	–	–	–	329,563
Total to other provinces.....	329,563	–	–	–	24,000	–	–	–	353,563
To Overseas—									
Total from all points.....	–	–	–	–	121,064	–	–	–	121,064
To United States—									
Total from all points.....	31,955	–	–	–	–	–	–	50,986	82,941
Total Exports.....	31,955	–	–	–	121,064	–	–	50,986	204,005
Total shipped out of Province.....	361,518	–	–	–	145,064	–	–	50,986	557,568

NOTE.—Bills of Lading from Meat Inspection Branch, Department of Agriculture, show no shipments from Nova Scotia and very few from New Brunswick.

A table showing interprovincial meat movements by months has also been prepared and is available to those desirous of studying the monthly fluctuations.

TABLE XIII.—Summary of Interprovincial and Export Shipments by Fiscal Years 1917-18 and 1918-19.

	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
Prince Edward Island, 1917-18—									
Shipments to other provinces	47,362	–	275,800	58,100	38,085	360	–	29,052	448,759
Exports	–	–	–	–	–	–	–	–	–
Total shipped out of province	47,362	–	275,800	58,100	38,085	360	–	29,052	448,759
Prince Edward Island, 1918-19—									
Shipments to other provinces	19,654	–	152,760	26,600	46,295	–	–	410	245,719
Exports	–	–	–	15,000	–	–	–	–	15,000
Total shipped out of province	19,654	–	152,760	41,600	46,295	–	–	410	260,719
Quebec, 1917-18—									
Shipments to other provinces	839,111	58,766	151,818	123,251	587,918	383,318	42,970	5,441,254	7,628,406
Exports	5,504,696	55,259	160,535	11,112	7,514,740	29,460	–	264,557	13,540,359
Total shipped out of province	6,343,807	114,025	312,353	134,363	8,102,658	412,778	42,970	5,705,811	21,168,765
Quebec, 1918-19—									
Shipments to other provinces	4,764,712	221,970	35,808	90,941	757,843	248,058	139,726	5,844,235	12,103,293
Exports	12,255,255	966,566	56,449	33,380	17,886,722	234,031	–	629,311	32,061,714
Total shipped out of province	17,019,967	1,188,536	92,257	124,321	18,644,565	482,089	139,726	6,473,546	44,165,007
Ontario, 1917-18—									
Shipments to other provinces	21,862,566	136,361	848,846	854,823	9,506,260	6,131,421	3,218,121	26,550,988	69,109,386
Exports	23,090,913	–	243,108	11,612	149,463,023	717,998	60	3,886,560	177,113,274
Total shipped out of province	44,953,479	136,361	1,091,954	866,435	158,969,283	6,849,419	3,218,181	30,137,548	246,222,660
Ontario, 1918-19—									
Shipments to other provinces	17,697,462	89,482	423,081	219,634	19,579,897	5,905,105	3,116,176	24,313,377	71,344,214
Exports	64,914,191	699,798	1,587,923	172,700	156,573,029	2,777,525	254,433	8,686,613	235,666,212
Total shipped out of province	82,611,653	789,280	2,011,004	392,334	176,152,926	8,682,630	3,370,609	32,999,990	307,010,426
Manitoba, 1917-18—									
Shipments to other provinces	7,532,247	134,477	178,124	161,099	4,510,320	1,393,948	29,121	4,575,826	18,515,162
Exports	20,958,483	–	–	–	4,925,246	100	36,041	1,215,292	27,135,162
Total shipped out of province	28,490,730	134,477	178,124	161,099	9,435,566	1,394,048	65,162	5,791,118	45,650,324
Manitoba, 1918-19—									
Shipments to other provinces	17,573,536	136,176	184,994	307,450	5,485,838	3,832,540	157,556	6,883,272	34,561,362
Exports	27,650,427	5,191	–	26,741	19,396,124	119,000	–	1,440,936	48,638,419
Total shipped out of province	45,223,963	141,367	184,994	334,191	24,881,962	3,951,540	157,556	8,324,208	83,199,781
Saskatchewan 1917-18—									
Shipments to other provinces	1,347,087	–	–	83,498	724,675	23,290	–	710,620	2,889,170
Exports	3,938,443	–	–	–	314,058	–	–	36,453	4,288,954
Total shipped out of province	5,285,530	–	–	83,498	1,038,733	23,290	–	747,073	7,178,124
Saskatchewan, 1918-19—									
Shipments to other provinces	4,058,113	–	150	82,861	725,184	30,720	170	969,784	5,866,982
Exports	7,769,876	–	–	–	5,558,215	–	–	122,583	13,450,674
Total shipped out of province	11,827,989	–	150	82,861	6,283,399	30,720	170	1,092,367	19,317,656
Alberta, 1917-18—									
Shipments to other provinces	3,750,474	18,156	105,335	1,168,041	3,783,541	1,689,525	5,559	6,168,991	16,689,622
Exports	20,372,316	–	–	–	7,594,044	620,121	–	361,259	28,947,740
Total shipped out of province	24,122,790	18,156	105,335	1,168,041	11,377,585	2,309,646	5,559	6,530,250	45,637,362

TABLE XIII.—Summary of Interprovincial and Export Shipments by Fiscal Years 1917-18 and 1918-19.

—	Beef	Veal	Mutton and Lamb	Pork Fresh	Pork Cured	Lard Pure	Lard Compound	Miscellaneous	Total
Alberta, 1918-19—									
Shipments to other provinces	1,552,485	8,608	43,838	36,884	1,374,260	344,535	58,689	6,901,503	10,320,802
Exports	32,265,110	42,552	–	–	16,503,390	113,099	–	2,277,648	51,201,799
Total shipped out of province	33,817,595	51,160	43,838	36,884	17,877,650	457,634	58,569	9,179,151	61,522,601
British Columbia, 1917-18—									
Shipments to other provinces	–	–	–	200	109,022	1,250	–	30,605	141,077
Exports	–	–	–	–	80,100	17,233	–	–	97,333
Total shipped out of province	–	–	–	200	189,122	18,483	–	30,605	238,410
British Columbia, 1918-19—									
Shipments to other provinces	–	–	–	–	–	–	–	–	
Exports	1,892,027	–	–	–	–	–	–	25,013	1,917,040
Total shipped out of province	1,892,027	–	–	–	–	–	–	25,013	1,917,040

TABLE XIV.—Canadian Domestic Sales of Produce, July 1918 to December 1918 inclusive.

This table shows data derived from the license reports of the Canada Food Board, giving the sales of the wholesale produce dealers within Canada and each part thereof, as shown below to wholesalers and to retailers. The sales to wholesalers are regarded as transfers, but the sales to retailers show the quantities of these goods, going on for consumption through wholesale channels. In the case of the cities of Montreal, Toronto and Winnipeg we are able to show the sales to other dealers in these cities consequently the sales to retailers in these cities show the consumption of these foods in these same cities in these months. The total sales made by the wholesalers in these cities are also given; from these may be gathered an idea of the total trade in these goods, by these city wholesalers. The difference between such total trade and the trade to other dealers in the same city shows the trade of that city with outside points.

DOMINION OF CANADA.

Commodity	Unit	Sales to Retailers	Sales to Retailers	Sales to Retailers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers
		July	August	September	October	November		December	
Eggs	Doz.	3,025,928	2,430,454	2,596,245	3,013,421	1,708,773	3,548,677	1,006,467	3,334,168
Creamery Butter	Lbs.	3,956,267	4,013,043	5,579,523	6,106,529	1,737,247	5,716,220	1,751,359	4,482,164
Dairy Butter	"	576,438	483,969	752,251	576,141	445,255	493,591	278,990	427,009
Cheese	"	1,702,445	1,712,975	2,414,394	2,855,301	2,656,928	2,609,969	1,438,497	1,437,079
Oleomargarine	"	697,808	455,433	800,801	1,167,999	933,539	1,030,840	392,716	911,689
Lard	"	1,341,938	1,673,960	2,429,552	2,117,975	1,420,058	2,157,686	896,890	1,701,058
Lard Compound	"	1,894,815	1,930,852	3,107,841	3,264,555	1,678,802	2,962,957	667,872	1,811,294
Beef, cured	"	426,322	210,322	2,701,210	387,265	126,410	1,231,370	66,005	195,837
Beef, fresh	"	8,866,160	9,078,951	14,131,871	11,582,448	16,305,260	15,326,911	9,553,224	14,493,332
Pork, cured	"	5,902,250	4,526,568	7,231,788	5,561,721	12,864,614	6,152,085	1,785,891	3,281,070
Pork, fresh	"	2,301,046	2,536,895	3,135,642	2,845,925	6,185,412	3,875,973	3,574,822	4,704,264
Mutton and Lamb	"	1,196,460	1,244,344	1,862,263	1,819,192	1,027,321	2,053,419	815,405	1,596,475

MARITIME PROVINCES.

Eggs	Doz.	107,171	179,208	122,013	224,099	33,556	267,545	76,386	303,561
Creamery Butter	Lbs.	118,242	185,152	169,118	223,457	2,053	222,407	8,159	238,766
Dairy Butter	"	35,209	60,863	103,363	120,561	5,927	97,221	19,713	63,320
Cheese	"	92,088	198,118	197,989	233,245	87,900	203,619	48,424	123,634
Oleomargarine	"	9,603	25,876	18,795	20,856	1,492	14,611	1,216	26,364
Lard	"	58,775	85,428	105,342	122,679	2,040	103,537	4,350	89,787
Lard Compound	"	291,670	119,571	140,229	199,120	9,576	197,418	9,123	107,280
Beef, cured	"	230,011	93,394	90,552	129,191	3,000	73,124	1,000	129,505
Beef, fresh	"	562,658	567,570	723,986	636,098	36,542	691,320	4,183	744,984
Pork, cured	"	169,628	160,309	224,258	233,807	13,501	172,823	10,025	179,288
Pork, fresh	"	18,346	36,297	57,921	66,457	31,953	37,791	11,179	110,924
Mutton and Lamb	"	26,094	62,492	114,299	99,049	12,586	41,528	7,221	56,930

QUEBEC.

Eggs	Doz.	1,016,337	652,433	744,380	970,377	31,931	963,109	45,469	1,151,478
Creamery Butter	Lbs.	1,665,132	1,303,125	1,850,359	2,614,909	199,071	2,093,507	398,494	1,354,972
Dairy Butter	"	91,298	44,856	78,850	158,597	4,181	84,691	3,359	88,858
Cheese	"	432,739	152,585	403,628	427,185	1,051,092	433,060	436,124	330,822
Oleomargarine	"	296,758	174,812	178,154	339,690	150,499	264,842	80,570	201,157
Lard	"	408,367	271,581	402,750	373,432	36,334	321,563	53,323	469,934
Lard Compound	"	63,057	636,147	733,538	756,199	87,695	505,064	32,592	370,297
Beef, cured	"	53,563	40,216	45,830	87,058	15,530	55,207	5,958	26,187
Beef, fresh	"	3,149,433	2,123,727	2,467,871	2,958,785	964,778	3,598,431	1,467,951	3,334,312
Pork, cured	"	1,591,962	847,715	1,153,762	1,198,579	470,236	792,429	248,427	609,395
Pork, fresh	"	932,727	608,035	860,360	1,132,791	9,810	825,400	15,463	1,238,778
Mutton and Lamb	"	331,527	297,252	396,167	499,523	46,408	476,728	8,253	328,243

ONTARIO.

Eggs	Doz.	941,628	976,966	961,441	1,231,563	976,175	1,560,607	589,783	1,307,636
Creamery Butter	Lbs.	1,147,270	1,633,553	2,160,710	2,192,006	801,789	2,099,400	871,442	1,746,410
Dairy Butter	"	358,325	155,534	183,238	200,687	63,978	217,927	53,404	156,458
Cheese	"	818,430	952,270	1,217,353	1,307,395	1,298,512	1,209,650	893,168	684,359
Oleomargarine	"	370,662	243,282	526,107	790,696	695,842	719,561	265,076	649,244
Lard	"	554,457	791,978	1,070,923	1,039,570	729,890	1,082,957	454,268	652,394
Lard Compound	"	961,081	678,146	1,664,934	1,873,624	1,116,882	1,854,885	434,948	1,025,243
Beef, cured	"	131,959	48,467	82,064	88,898	103,033	59,322	56,346	35,320
Beef, fresh	"	2,898,362	3,505,605	6,113,846	5,163,257	6,701,485	7,244,169	3,946,455	6,307,317
Pork, cured	"	3,180,884	2,561,650	3,498,774	3,068,093	1,370,282	3,019,897	654,084	1,741,600
Pork, fresh	"	877,100	1,034,378	1,360,696	1,042,321	3,787,627	1,390,389	2,365,824	1,319,884
Mutton and Lamb	"	261,491	473,053	857,244	805,800	675,474	1,110,754	550,533	905,816

TABLE XIV.—Canadian Domestic Sales of Produce, July, 1918, to December, 1918, inclusive.—Continued.

MANITOBA.

Commodity	Unit	Sales to Retailers	Sales to Retailers	Sales to Retailers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers
		July	August	September	October	November		December	
Eggs	Doz.	555,560	133,341	199,307	82,623	480,539	175,846	215,975	109,827
Creamery butter	Lbs.	306,335	107,798	131,321	236,433	284,421	342,950	322,528	233,707
Dairy butter	"	38,112	30,973	302,792	31,353	289,779	31,001	112,185	29,082
Cheese	"	66,057	75,623	160,767	295,263	146,816	203,526	17,400	73,126
Oleomargarine	"	14,343	7,252	56,977	6,460	67,495	26,906	28,998	21,694
Lard	"	89,842	99,749	178,387	92,589	346,704	224,392	108,381	175,039
Lard compound	"	489,247	59,472	175,121	102,221	183,633	124,612	78,366	108,543
Beef, cured	"	9,049	–	2,449,638	–	–	1,635	–	2,200
Beef, fresh	"	795,462	620,505	1,215,642	984,873	3,050,532	878,428	2,210,402	976,187
Pork, cured	"	356,601	74,762	618,483	304,530	380,985	1,020,450	536,877	194,030
Pork, fresh	"	236,466	97,806	311,724	150,587	1,853,413	551,056	280,421	345,815
Mutton and lamb	"	90,675	23,164	114,264	98,439	177,054	109,086	128,965	117,492

SASKATCHEWAN.

Eggs	Doz.	70,844	30,071	43,973	20,759	14,340	69,959	6,000	101,057
Creamery butter	Lbs.	11,838	6,944	76,496	17,940	–	38,654	2,800	38,790
Dairy butter	"	16,132	13,659	8,828	15,666	5,466	14,660	23,511	24,385
Cheese	"	88,631	53,692	83,694	191,353	–	158,762	84	38,736
Oleomargarine	"	630	682	1,198	2,016	–	674	–	3,309
Lard	"	60,616	76,558	176,627	63,663	8,640	132,053	1,020	89,162
Lard compound	"	35,514	29,754	53,800	35,878	710	58,231	930	55,690
Beef, cured	"	600	100	2,216	79,128	–	–	–	100
Beef, fresh	"	222,370	62,616	513,111	26,170	2,956,634	2,452,155	33,053	2,284,040
Pork, cured	"	151,455	65,586	428,910	12,455	237,847	374,590	167	244,215
Pork, fresh	"	24,893	13,398	51,681	8,916	–	756,251	–	1,402,864
Mutton and lamb	"	80,388	17,925	38,457	5,377	–	32,901	–	31,108

ALBERTA.

Eggs	Doz.	53,888	157,946	209,873	154,793	98,891	172,737	25,758	134,767
Creamery butter	Lbs.	137,316	131,005	355,241	208,229	301,469	304,126	99,191	239,633
Dairy butter	"	20,018	90,909	57,057	23,024	46,477	34,618	65,596	49,985
Cheese	"	33,590	102,800	142,926	204,858	64,198	234,752	36,205	90,542
Oleomargarine	"	–	815	18,151	7,581	17,521	5,350	8,936	8,190
Lard	"	31,821	171,990	286,435	211,089	275,403	216,015	155,708	149,704
Lard compound	"	52,251	97,280	133,729	128,936	255,195	102,187	84,720	90,278
Beef, cured	"	45	869	267	100	4,847	–	2,701	66
Beef, fresh	"	36,764	1,021,918	2,170,633	554,234	2,151,189	276,201	1,502,861	416,480
Pork, cured	"	86,072	456,758	942,692	392,573	324,611	255,203	290,729	232,356
Pork, fresh	"	29,382	502,658	261,312	190,519	426,954	342,599	806,344	165,842
Mutton and lamb	"	12,919	119,525	143,326	91,184	69,795	68,776	83,466	58,899

BRITISH COLUMBIA.

Eggs	Doz.	280,500	300,489	315,256	329,207	73,341	338,874	47,096	225,842
Creamery butter	Lbs.	569,934	645,466	836,308	613,555	148,444	615,176	48,745	629,886
Dairy butter	"	17,344	88,075	18,123	26,253	29,447	13,473	1,222	14,921
Cheese	"	170,880	177,887	208,035	196,002	8,408	166,340	7,092	95,861
Oleomargarine	"	5,812	2,714	1,419	700	690	1,896	7,920	1,753
Lard	"	138,060	176,676	209,088	214,953	21,047	77,169	29,839	75,041
Lard compound	"	1,995	310,482	206,490	168,557	22,111	117,560	27,193	53,963
Beef, cured	"	1,095	27,276	30,643	2,890	–	1,042,082	–	2,209
Beef, fresh	"	1,201,111	1,177,010	926,782	1,259,031	444,100	186,207	388,319	430,012
Pork, cured	"	365,618	359,808	364,909	351,684	67,152	486,693	45,582	79,986
Pork, fresh	"	181,932	244,323	221,948	254,354	75,655	72,487	95,391	120,160
Mutton and lamb	"	393,366	250,933	198,506	219,820	46,004	213,646	36,967	97,987

TABLE XIV.—Canadian Domestic Sales of Produce, July, 1918, to December, 1918, inclusive.—Continued.

Commodity	Unit	MONTREAL SALES—LOCAL				MONTREAL—TOTAL SALES			
		Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers
		November		December		November		December	
Eggs	Doz.	18,989	514,985	37,101	760,280	26,861	869,474	43,161	1,036,272
Creamery butter	Lbs.	573,757	1,335,223	368,785	850,525	175,273	1,789,522	369,125	1,032,738
Dairy butter	"	4,181	27,855	2,743	38,950	4,181	42,251	33,591	49,178
Cheese	"	739,771	285,475	305,125	183,350	1,036,967	387,603	432,581	289,765
Oleomargarine	"	115,809	159,808	73,670	116,647	119,079	191,506	73,820	151,346
Lard	"	12,032	144,330	26,819	270,158	30,814	235,466	35,823	401,554
Lard compound	"	31,411	227,550	32,587	152,345	34,015	306,098	32,592	230,340
Beef, cured	"	10,330	35,697	5,958	10,384	15,530	41,997	5,958	12,284
Beef, fresh	"	77,762	2,955,020	110,548	3,161,560	964,778	3,204,868	1,467,951	3,145,364
Pork, cured	"	103,129	362,542	63,006	318,217	117,236	532,820	75,427	431,402
Pork, fresh	"	9,810	385,272	15,463	683,364	9,810	700,523	15,463	1,058,921
Mutton and lamb	"	40,927	428,368	3,690	278,609	46,408	453,146	8,253	307,184

Commodity	Unit	TORONTO SALES—LOCAL				TORONTO—TOTAL SALES			
		Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers
		November		December		November		December	
Eggs	Doz.	333,239	745,858	250,603	438,756	570,168	1,043,679	401,658	832,569
Creamery butter	Lbs.	368,822	880,848	284,986	692,821	690,369	1,290,360	631,859	1,017,475
Dairy butter	"	293	66,416	8,317	45,022	26,647	74,871	27,110	58,376
Cheese	"	253,096	260,969	154,235	188,519	435,667	546,545	292,757	382,874
Oleomargarine	"	159,221	111,795	96,950	82,346	523,930	463,672	244,115	405,958
Lard	"	91,425	216,398	57,551	133,424	597,333	785,154	392,725	431,129
Lard compound	"	133,214	383,059	102,645	235,139	1,079,300	1,596,036	424,976	810,357
Beef, cured	"	11,112	772	13,339	7,581	102,833	50,442	51,646	33,632
Beef, fresh	"	1,542,666	2,918,322	1,103,932	2,303,402	6,537,597	5,662,764	3,707,544	5,351,994
Pork, cured	"	80,752	756,644	127,385	425,441	1,059,444	2,310,930	537,542	1,189,224
Pork, fresh	"	323,708	737,550	203,317	476,924	3,702,750	1,066,535	2,288,865	935,500
Mutton and lamb	"	300,152	609,987	213,927	405,300	663,835	967,764	541,077	807,448

Commodity	Unit	WINNIPEG SALES—LOCAL				WINNIPEG—TOTAL SALES			
		Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers	Sales to Wholesalers	Sales to Retailers
		November		December		November		December	
Eggs	Doz.	48,405	116,320	5,083	74,910	480,539	172,786	202,595	107,386
Creamery butter	Lbs.	46,253	52,197	82,261	193,983	282,069	321,091	320,008	213,014
Dairy butter	"	44,410	14,776	82,906	16,013	289,779	30,586	112,185	28,691
Cheese	"	17,963	60,973	8,361	48,124	146,816	187,526	17,400	71,596
Oleomargarine	"	9,790	5,442	11,960	6,134	67,495	26,876	28,998	21,694
Lard	"	159,067	48,419	44,301	47,207	346,704	221,007	108,381	173,939
Lard compound	"	110,889	50,718	49,645	47,307	183,633	119,666	78,366	107,250
Beef, cured	"	–	1,635	–	2,200	–	1,635	–	2,200
Beef, fresh	"	1,414,817	612,341	654,757	707,424	3,050,532	875,411	2,210,402	976,187
Pork, cured	"	72,367	109,492	183,091	111,924	380,985	993,420	536,877	157,954
Pork, fresh	"	170,298	227,792	156,789	285,592	1,853,413	548,590	250,421	336,973
Mutton and lamb	"	52,762	81,537	40,780	63,854	177,054	105,408	128,965	115,365

TABLE XIV.—Canadian Domestic Sales of Produce, July, 1918, to December, 1918, inclusive.—Concluded.

STOCKS OF FOOD IN TRANSIT IN CANADA, JULY, 1918-DECEMBER, 1918.

Commodity	Unit	July	August	September	October	November	December
Eggs	Doz.	876,050	107,103	1,923,004	1,278,560	1,843,246	218,028
Creamery butter	Lbs.	771,634	407,354	2,969,857	1,845,873	1,838,840	2,959,730
Dairy butter	"	53,964	26,384	137,304	53,287	425,434	184,210
Cheese	"	3,833,969	473,786	1,184,715	1,469,159	1,288,433	988,980
Oleomargarine	"	24,690	3,770	44,962	34,006	11,860	21,936
Lard	"	27,439	58,865	54,575	50,905	37,168	54,861
Lard compound	"	43,876	98,346	265,996	282,187	393,156	311,993
Beef, cured	"	15,660	12,298	1,696,756	2,200	1,860,550	146,101
Beef, fresh	"	753,790	53,769	3,624,934	3,210,887	2,228,002	3,982,840
Pork, cured	"	534,381	217,744	241,952	99,309	191,817	260,610
Pork, fresh	"	142,670	28,212	95,106	14,504	12,626	29,545
Mutton and lamb	"	12,727	5,562	30,961	4,226	126,848	129,089

TABLE XV.—Meat Supply in Principal Countries.

ALL ANIMALS AND MEATS.

Country.		Animals on Farms.		Present numbers expressed as percentage of pre-war figures.	Consumption.		Pre-war Foreign Trade. (4 Year Average.)	
		Pre-war numbers.	Present numbers.		Per Capita.	Present total estimated quantity in lbs. for whole population.	Exports.	Imports.
		(June 30, 1914)	(1919)					
Canada	Live	11,529,123	17,546,039	152·19	– (1910)	–	*137,161	*223,357
	Dressed	–	–	–	137	1,177,241,000	52,127,291	37,188,188
		(Jan. 1, 1914)	(Jan. 1, 1920)					
United States	Live	172,903,000	189,656,000	109·69	– (1909)	–	244,372	334,377
	Dressed	–	–	–	170·6	17,542,168,345	1,154,332,294	7,071,014
		(June 4, 1914)	(June 9, 1917)					
United Kingdom	Live	43,970,545	42,988,302	97·77	– [1909-13]	–	2,421	82,585
	Dressed	–	–	–	126	5,699,183,492	29,722,784	2,549,995,112
		(Dec. 31, 1913)	(June 30, 1918)					
France	Live	37,955,050	26,832,068	70·69	– (1904)	–	235,597	1,287,231
	Dressed	–	–	–	79	4,128,519,211	22,479,093	48,297,107
		(March 10, 1908)	(April 7, 1918, Provisional)					
Italy	Live	19,870,000	20,251,138	101·92	– (1901)	–	78,105	109,075
	Dressed	–	–	–	46·5	1,655,307,000	11,962,842	32,389,796
		(Dec. 31, 1913)						
Belgium	Live	3,446,000	–	–	– (1902)	–	–	229,5
	Dressed	–	–	–	70	529,997,090	17,514,143	41,811,54
		(June, 1913)	(August, 1918)					
Holland	Live	4,288,821	3,291,329	76·74	– (1902)	–	327,031	–
	Dressed	–	–	–	70	455,000,000	125,728,625	7,032,702
		(July 15, 1914)	(July 15, 1918)					
Denmark	Live	5,474,476	3,214,653	58·72	– (1902)	–	136,513	22,749
	Dressed	–	–	–	76	210,905,776	304,191,327	12,332,510
		(Dec. 31, 1913)	(June 1, 1916)					
Sweden	Live	4,677,000	5,177,024	110·69	– (1902)	–	31,824	2,521
	Dressed	–	–	–	62	352,160,000	29,239,830	6,595,450
		(Sept. 30, 1910)	(Sept. 30, 1916)					
Norway	Live	2,865,705	2,621,553	91·48	– (1902)	–	–	15,483
	Dressed	–	–	–	62	152,458,000	750,884	16,436,392
		(1913)	(1915)					
Russia	Live	92,377,089	86,739,916	93·90	– (1899)	–	145,507	–
	Dressed	–	–	–	50	8,756,850,000	45,163,626	264,795

*Canadian Exports and Imports of Live Animals—Average 1912-14.

TABLE XV. —Meat Supply in Principal Countries.—Continued.

ALL ANIMALS AND MEATS—Concluded.

		Animals on Farms.		Present numbers expressed as per-centage of pre-war figures.	Consumption.		Pre-war Foreign Trade. (4 year average)	
		Pre-war numbers.	Present numbers.		Per Capita	Present total estimated quantity in lbs. for whole population	Exports.	Imports.
Germany	Live.....	(Dec. 2, 1912) 47,909,173	(1916) 42,855,208	89·45	–	–	39,004	340,537
	Dressed	–	–	–	(1913) 111·8	7,458,737,000	4,791,300	65,811,643
Austria. Hungary.	Live.....	44,933,000	–	–	–	–	117,208	31,596
	Dressed	–	–	–	(1890) 64	3,200,000,000	5,690,223	9,351,791
Argentina..	Live.....	(Dec. 31, 1913) 115,478,000	–	–	–	..	289,234	95,877
	Dressed	–	–	–	(1899) 140	1,083,655,440	905,384,589	2,852,346
Uruguay...	Live.	(1908) Cattle & Sheep 34,478,808 Hogs. 480,099	(1916) Cattle & Sheep 19,284,693 –	–	–	–	–	–
	Dressed	–	–	–	–	–	157,118,557	–
Australia. ...	Live.....	(1913) 97,341,789	(Dec. 31, 1915) 79,928,564	82·11	–	–	39,400	4,567
	Dressed	–	–	–	(1902) 262·6	1,287,529,638	310,138,281	–
New Zealand	Live. .	(April 1, 1911) 26,095,051	(Jan. 31, 1917) 27,534,210	105·51	–	–	33,444	–
	Dressed	–	–	–	(1902) 212·5	233,600,188	272,004,096	184,128

* Canadian Exports and Imports of Live Animals—Average 1912-14.

Population figures used in estimating total present consumption are from World Almanac, 1918, except in case of New Zealand, Australia and Canada. New Zealand and Australian figures are from Statesman's Year Book, 1917, and Canadian figures from Canada Year Book, 1918. Per Capita Consumption figures are from Bulletin 109 published by United States Dept. of Agriculture.

Numbers of Animals on Farms are taken from Annuaire of International Institute of Agriculture.

Pre-War Foreign Trade Figures are from original trade records of countries in question.

TABLE XV.—Meat Supply in Principal Countries—Continued.

BEEF AND CATTLE

Country.		Animals on Farms.		Present numbers expressed as per-centage of pre-war figures.	Consumption.		Pre-war Foreign Trade. (4-Year Average.)	
		Pre-war numbers.	Present numbers.		Per Capita.	Present total estimated quantity in lbs. for whole population.	Exports.	Imports.
Canada	Live	(June 30, 1914) 6,036,817	(1919) 10,084,011	167·04	–	–	§108,514	§6,813
	Dressed	–	–		61	524,173,000	4,156,842	2,745,231
United States.	Live	(Jan. 1, 1914) 58,329,000	(Jan. 1, 1920) 68,132,000	116·81	–	–	104,938	279,721
	Dressed	–	–	–	84·5	8,688,823,110	239,088,178	7,071,014
United Kingdom	Live	June 4, 1914) 12,144,563	(June 9, 1917) 12,333,302	101·59	–	–	1,768	66,257
	Dressed	–	–	–	60	2,713,896,900	–	1,016,766,940
France	Live	(Dec. 31, 1913) 14,787,810	(June 30, 1918) 13,314,856	90·04	–	–	127,460	26,672
	Dressed	–	–	–	43	1,702,864,887	*9,956,953	*6,231,054
Italy	Live	(Mar. 10, 1908) 6,199,000	(April 7, 1918 Provisional) 6,162,259	99·41	–	–	24,903	97,991
	Dressed	–	–	–	–	–	–	–
Belgium	Live	(Dec. 31, 1913) 1,849,000	–	–	–	–	–	(Horned Cattle) 65,314
	Dressed	–	–	–	–	–	†285,629	†1,275,760
Holland	Live	(June, 1913) 2,096,599	(August, 1918) 2,048,872	97·72	–	–	79,121	–
	Dressed	–	–	–	–	–	39,283,802	777,966
Denmark	Live	(July 15, 1914) 2,462,862	(July 15, 1918) 2,123,722	86·23	–	–	135,989	15,185
	Dressed	–	–	–	–	–	38,855,959	1,298,304
Sweden	Live	(Dec. 31, 1913) 2,721,000	(June 1, 1916) 2,913,159	107·06	–	–	31,824	2,521
	Dressed	–	–	–	–	–	13,143,751	1,259,811
Norway	Live	(Sept. 30, 1910) 1,133,613	(Sept. 30, 1916) 1,119,306	98·74	–	–	–	15,843
	Dressed	–	–	–	–	–	203	–
Russia	Live	(1913) 37,138,784	(1915) 32,885,973	88·55	–	–	–	–
	Dressed	–	–	–	–	–	–	–
Germany	Live	(Dec. 2, 1912) 20,182,021	(Dec., 1916) 20,873,679	103·43	–	–	2,724	218,213
	Dressed	–	–	–	38·6	2,575,199,000	719,712	49,031,348
Austria-Hungary	Live	17,648,000	–	–	–	–	77,966	31,596
	Dressed	–	–	–	–	–	822,961	3,523,335
Argentina	Live	(Dec. 31, 1913) 30,796,000	–	–	–	–	190,043	22,189
	Dressed	–	–	–	–	–	722,092,802	–
Uruguay	Live	(1908) 8,192,602	(1916) 7,802,442	95·24	–	–	–	–
	Dressed	–	–	–	–	–	‡152,944,145	–
Australia	Live	(1913) 11,483,882	(Dec. 31, 1915) 9,931,000	–	–	–	11,099	–
	Dressed	–	–	–	–	–	144,835,657	
New Zealand	Live	(April 1, 1911) 1,720,171	(Jan. 31, 1917) 2,502,700	145·49	–	–	313	–
	Dressed	–	–	–	–	–	37,367,456	–

*Beef is given in category "Beef and Others."
§Canadian Exports and Imports Live Animals—Average 1912-14.
†Beef is given only in category "Fresh Butcher Meats Other than Pork."
‡Preserved, frozen and salted meats, also Tongues (probably principally Beef).

TABLE XV.—Meat Supply in Principal Countries—Continued.

SHEEP.

Country.		Animals on Farms.		Present numbers expressed as percentage of pre-war figures.	Consumption.		Pre-war Foreign Trade. (4-Year Average.)	
		Pre-war numbers.	Present numbers.		Per Capita.	Present total estimated quantity in lbs. for whole population.	Exports.	Imports.
Canada.	Live....	(June 30, 1914) 2,058,045	(1919) 3,421,958	166·27	9	77,337,000	†18,574 44,513	†210,684 4,479,724
	Dressed.	–	–					
United States...	Live....	(Jan. 1, 1914) 49,956,000	(Jan. 1, 1920) 48,615,000	97·05	6·6	678,653,639	127,601 3,252,823	54,656 –
	Dressed	–	–					
United Kingdom.	Live	(June 4, 1914) 27,886,095	(June 9, 1917) 27,650,000	99·15	26	1,176,021,990	650 –	16,325 596,300,600
	Dressed	–	–					
France.....	Live	(Dec. 31, 1913) 16,131,390	(June 30, 1918) 9,496,315	58·87	9	356,413,581	46,283 484,163	1,087,182 943,134
	Dressed	–	–					
Italy.....	Live....	(Mar. 10, 1908) 11,163,000	(April 7, 1918 Provisional) 11,751,575	105·27	–	–	29,837	(Sheep and Goats) 5,750
	Dressed	–	–	–	–	–	–	–
Belgium....	Live....	(Dec. 31, 1910) 185,000	–	–	–	–	–	164,169
	Dressed	–	–	–	–	–	–	–
Holland.....	Live....	(June, 1913) 842,018	(August, 1918) 642,324	76·28	–	–	100,509	–
	Dressed	–	–	–	–	–	20,474,772	52,208
Denmark...	Live	(July 15, 1914) 514,908	(July 15, 1918) 470,051	91·29	–	–	(Sheep and Goats) 490	(Sheep, Goats and Swine) 7,564
	Dressed	–	–	–	–	–	376,173	3,564,327
Sweden....	Live....	(Dec. 31, 1913) 988,000	(June, 1916) 1,198,469	121·30	–	–	–	–
	Dressed	–	–	–	–	–	93,686	1,230,377
Norway	Live.....	(Sept. 30, 1910) 1,398,383	(Sept. 30, 1916) 1,281,030	91·61	–	–	–	–
	Dressed	–	–	–	–	–	–	–
Russia...	Live. ..	(1913) 42,761,989	(1915) 41,553,012	97·18	–	–	–	–
	Dressed	–	–	–	–	–	–	–
Germany	Live	(Dec. 2, 1912) 5,803,445	(1916) 4,979,128	85·79	1·9	126,758,500	21,839	–
	Dressed	–	–	–	–	–	320,552	*700,418
Austria Hungary.	Live.....	12,337,000	–	–	–	–	(Sheep, Goats, etc.) 39,242	–
	Dressed	–	–	–	–	–	–	–
Uruguay.....	Live....	(1908) 26,286,296	(1916) 11,482,251	43·68	–	–	–	–
	Dressed	–	–	–	–	–	4,470,031	–
Argentina..	Live.....	(Dec. 31, 1913) 81,485,000	–	–	–	–	99,191	73,583
	Dressed	–	–	–	–	–	152,762,795	–
Australia.....	Live.....	(1913) 85,057,402	(Dec. 31, 1915) 69,244,603	81·41	–	–	28,301	4,867
	Dressed	–	–	–	–	–	160,025,597	–
New Zealand	Live.....	(April 1, 1911) 23,996,126	(Jan. 31, 1917) 24,753,324	103·16	–	–	33,131	–
	Dressed	–	–	–	–	–	233,597,952	112

*Sheep Meat includes Goat Meat, etc.
†Canadian Exports and Imports of Live Animals—Average 1912-14.

TABLE XV—Meat Supply in Principal Countries—Concluded.

SWINE

Country.		Animals on Farms.		Present numbers expressed as percentage of pre-war figures.	Consumption.		Pre-war Foreign Trade. (4-Year Average.)	
		Pre-war numbers.	Present numbers.		Per Capitn.	Present total estimated quantity in lbs. for whole population.	Exports.	Imports.
Canada	Live	(June 30, 1914) 3,434,261	(1919) 4,040,070	117·64	–	–	†10,073	†5,860
	Dressed	–	–	–	67	575,731,000	47,538,269	26,579,188
United States	Live	(Jan. 1, 1914) 64,618,000	(Jan. 1, 1920) 72,909,000	112·83	–	–	11,833	–
	Dressed	–	–	–	79·5	8,174,691,566	911,991,293	–
United Kingdom	Live	(June 4, 1914) 3,939,887	(June 9, 1917) 3,000,000	76·15	–	–	3	–
	Dressed	–	–	–	33	1,492,643,295	15,055,040	936,927,572
France	Live	(Dec. 31, 1913) 7,035,850	(June 30, 1918) 4,020,897	57·15	–	–	61,854	173,377
	Dressed	–	–	–	27	1,069,240,743	12,037,977	41,122,919
Italy	Live	(Mar. 10, 1908) 2,508,000	(April 7, 1918 Provisional) 2,337,304	93·19	–	–	23,365	5,334
	Dressed	–	–	–	–	–	1,500,503	13,863,882
Belgium	Live	(Dec. 31, 1913) 1,412,000	–	–	–	–	–	–
	Dressed	–	–	–	–	–	14,518,944	19,782,552
Holland	Live	(June, 1913) 1,350,204	(Aug., 1918) 600,133	44·45	–	–	147,401	–
	Dressed	–	–	–	–	–	*67,838,249	*4,993,039
Denmark	Live	(July 15, 1914) 2,496,706	(July 15, 1918) 620,880	24·87	–	–	43	–
	Dressed	–	–	–	–	–	264,959,195	7,469,879
Sweden	Live	(Dec. 31, 1913) 968,000	(June, 1916) 1,065,396	110·06	–	–	–	–
	Dressed	–	–	–	–	–	*16,002,393	*4,105,262
Norwny	Live	(Sept. 30, 1910) 333,709	(Sept. 30, 1916) 221,217	66·29	–	–	–	–
	Dressed	–	–	–	–	–	447,981	5,117,161
Russia	Live	(1913) 12,476,316	(1915) 12,300,931	98·59	–	–	–	–
	Dressed	–	–	–	–	–	–	–
Germany	Live	(Dec. 2, 1912) 21,923,707	(1916) 17,002,401	77·55	71·3	4,756,779,500	14,450	122,319
	Dressed	–	–	–	–	–	3,751,036	15,179,882
Austria / Hungary	Live	14,948,000	–	–	–	–	–	–
	Dressed	–	–	–	–	–	*3,104,254	* 5,577,658
Argentina	Live	(Dec. 31, 1913) 3,197,000	–	–	–	–	–	–
	Dressed	–	–	–	–	–	25,646	1,748,274
Uruguay	Live	(1908) 180,099	–	–	–	–	–	–
	Dressed	–	–	–	–	–	4,381	–
Australia	Live	(1913) 800,505	(Dec. 31, 1915) 752,961	94·06	–	–	–	–
	Dressed	–	–	–	–	–	5,277,027	–
New Zealnnd	Live	(April 1, 1911) 378,754	(Jan. 31, 1917) 278,186	73·45	–	–	–	–
	Dressed	–	–	–	–	–	1,03,6888	184,016

*Pork does not include Lard.
†Canadian Exports and Imports Live Animals—Average 1912–14.
NOTE.—Complete historical data for various countries is on file in the Bureau and is available to those wishing to make use of same.

TABLE XVI (a). - Exports and Imports of Live Stock by Numbers.

CATTLE.

Fiscal Year	Exports			Imports			Net Exports
	One year old or less	Over one year old	Total	For improvement of stock	N.O.P.	Total	
	No.	No.	No.	No.	No.	No.	No.
1909–1909	2,059	155,327	157,386	280	1,012	1,292	156,094
1910–1911	670	124,253	124,923	525	3,044	3,569	121,354
1911–1912	232	61,285	61,517	388	2,976	3,364	58,153
1912–1913	5,409	38,887	44,296	533	8,128	8,661	35,635
1913–1914	20,782	198,947	219,729	358	9,369	9,727	210,002
1914–1915	31,082	151,821	185,903	331	1,683	2,014	183,889
1915–1916	56,455	185,105	241,560	158	374	532	241,028
1916–1917	59,171	107,011	166,182	582	3,094	3,676	162,506
1917–1918	45,320	146,036	191,356	951	4,025	4,976	186,380
1918–1919	39,917	271,579	311,496	626	6,616	7,242	304,254

SHEEP.

1909–1910	88,236	22,871	111,107	166	35,844	36,010	75,097
1910–1911	9,672	36,925	46,597	210	68,673	68,883	22,286
1911–1912	5,950	15,468	21,418	88	192,530	192,618	- 171,200
1912–1913	5,356	8,404	13,760	28	229,743	229,771	- 216,011
1913–1914	13,324	7,219	20,543	316	209,779	210,095	- 189,552
1914–1915	35,293	7,529	42,822	343	110,663	111,006	- 68,174
1915–1916	74,350	20,128	94,478	82	68,564	68,646	25,832
1916–1917	43,545	15,679	59,224	263	67,742	68,005	- 8,781
1917–1918	114,031	20,674	134,705	7,580	37,881	45,461	89,244
1918–1919	94,029	26,102	120,131	11,290	1,150	12,440	107,691

SWINE.

					Lbs.		
1909–1910	-	-	390	23	2,760	-	-
1910–1911	-	-	3,335	99	1,945	-	-
1911–1912	-	-	1,358	26	2,918	-	-
1912–1913	-	-	654	54	5,607	-	-
1913–1914	-	-	28,207	190	9,055	-	-
1914–1915	-	-	243,311	68	3,830	-	-
1915–1916	-	-	9,925	6	1,519	-	-
1916–1917	-	-	1,501	51	1,885	-	-
1917–1918	-	-	15,647	69	2,868	-	-
1918–1919	-	-	32,053	31	3,047	-	-

TABLE XVI (b).—Exports and Imports of Live Stock by Values.

CATTLE.

Fiscal Year	Exports			Imports			Net Exports
	One year old or less	Over one year old	Total	For improvement of stock	N.O.P.	Total	
	$	$	$	$	$	$	$
1909-1910	24,534	10,767,622	10,792,156	48,338	25,150	73,488	10,718,668
1910-1911	15,494	8,521,979	8,537,473	71,706	55,621	127,387	8,410,086
1911-1912	3,116	4,095,063	4,098,179	68,659	61,829	130,488	3,967,691
1912-1913	53,824	2,183,311	2,237,135	101,173	141,783	242,956	1,994,179
1913-1914	252,078	7,654,716	7,906,794	76,025	193,732	269,757	7,637,037
1914-1915	416,038	8,851,496	9,267,534	57,333	42,255	99,588	9,167,946
1915-1916	627,005	11,998,755	12,625,760	48,976	16,422	65,398	12,560,362
1916-1917	924,402	6,959,440	7,883,842	127,948	95,490	223,438	7,660,404
1917-1918	687,794	13,441,150	14,136,944	391,491	194,285	585,776	13,551,168
1918-1919	723,463	29,346,027	30,069,490	277,608	381,545	659,153	29,410,337

SHEEP.

1909-1910	416,909	190,831	607,740	4,194	131,492	135,686	472,054
1910-1911	48,287	238,550	286,837	7,651	229,759	237,410	49,427
1911-1912	27,276	95,203	122,479	1,835	578,055	579,890	— 457,411
1912-1913	30,078	51,175	81,253	1,000	626,677	627,677	— 546,424
1913-1914	70,719	57,774	128,493	13,111	630,879	643,990	— 515,497
1914-1915	211,714	74,898	286,612	6,108	362,051	368,159	— 81,547
1915-1916	444,260	149,505	593,765	1,050	232,295	233,345	360,420
1916-1917	322,345	173,094	495,439	6,807	244,709	251,516	243,923
1917-1918	1,376,552	329,464	1,706,016	49,886	133,504	183,390	1,522,626
1918-1919	1,192,766	417,096	1,609,862	140,257	10,064	150,321	1,459,541

SWINE.

1909-1910	–	–	7,841	429	2,140	2,569	5,275
1910-1911	–	–	49,403	3,524	1,169	4,693	44,710
1911-1912	–	–	10,028	907	310	1,217	8,811
1912-1913	–	–	5,162	2,429	450	2,879	2,283
1913-1914	–	–	446,430	5,085	843	5,928	440,502
1914-1915	–	–	3,117,005	1,964	795	2,759	3,114,246
1915-1916	–	–	70,710	220	193	413	70,297
1916-1917	–	–	32,570	2,194	1,026	3,220	29,350
1917-1918	–	–	383,736	3,842	926	4,768	378,968
1918-1919	–	–	760,040	2,232	1,351	3,583	756,457

TABLE XVII.—Summary of Canadian Foreign Trade in Provisions.

PORK (Pounds).

Fiscal Year	Canadian				British	
	Total Exports	Exports to United Kingdom	Total Imports	Net Exports	Total Imports	Calendar Year
1909-1910	50,919,950	50,336,893	25,293,452	25,626,498	918,630,160	1909
1910-1911	60,471,261	60,020,697	20,098,720	40,372,541	755,115,872	1910
1911-1912	62,738,042	61,574,804	25,377,913	37,360,129	933,608,816	1911
1912-1913	39,257,015	38,425,543	35,918,951	3,338,064	879,025,168	1912
1913-1914	27,686,759	25,376,478	24,921,168	2,765,591	946,757,872	1913
1914-1915	118,737,555	88,890,633	10,715,473	108,022,082	988,328,432	1914
1915-1916	168,818,891	161,729,754	60,606,553	106,212,338	1,186,132,516	1915
1916-1917	227,009,604	223,534,500	96,704,657	130,304,947	1,261,082,032	1916
1917-1918	217,698,023	212,806,513	89,791,037	127,906,986	1,056,396,432	1917
1918-1919	162,673,205	152,435,257	16,544,206	146,128,999	1,668,828,448	1918

BEEF (Pounds).

1909-1910	1,318,397	828,140	1,446,302	— 127,905	737,358,608	1909
1910-1911	974,411	482,371	1,170,649	— 196,238	846,392,400	1910
1911-1912	948,771	274,419	1,976,949	— 1,028,178	905,979,984	1911
1912-1913	1,570,979	752,920	1,628,564	— 57,585	968,251,872	1912
1913-1914	13,133,205	196,787	6,204,842	6,928,363	1,108,921,184	1913
1914-1915	18,828,257	1,330,282	1,783,936	17,044,321	1,083,914,720	1914
1915-1916	47,422,564	13,912,371	9,343,276	38,079,288	1,169,330,960	1915
1916-1917	45,546,176	15,179,195	11,627,282	33,918,894	978,218,752	1916
1917-1918	86,565,104	32,768,400	13,390,319	73,174,785	865,087,328	1917
1918-1919	127,113,294	91,791,877	1,891,713	125,221,581	1,060,765,328	1918

MEATS, CANNED AND PRESERVED (Pounds).

1909-1910	1,696,718	1,685,833	1,123,094	573,624	–	1909
1910-1911	418,745	393,999	2,237,057	— 1,818,312	–	1910
1911-1912	238,403	191,454	3,450,722	— 3,212,319	–	1911
1912-1913	254,937	244,732	4,037,730	— 3,782,793	–	1912
1913-1914	638,583	279,922	3,802,589	— 3,164,006	–	1913
1914-1915	9,882,662	6,039,495	2,188,392	7,694,270	–	1914
1915-1916	11,031,893	9,759,909	1,229,524	9,802,369	–	1915
1916-1917	6,676,094	4,287,392	1,257,426	5,418,668	–	1916
1917-1918	13,422,624	1,549,254	1,142,526	12,280,098	–	1917
1918-1919	14,140,717	7,546,825	932,660	13,208,057	–	1918

BUTTER (Pounds).

1909-1910	4,615,380	2,595,357	393,582	4,221,798	445,034,944	1909
1910-1911	3,142,682	1,733,060	1,227,390	1,915,292	484,460,368	1910
1911-1912	8,844,402	7,458,936	3,874,587	4,969,815	581,901,504	1911
1912-1913	828,323	681	7,989,269	— 7,160,946	448,577,808	1912
1913-1914	1,228,753	138,349	7,317,259	— 6,088,506	463,571,136	1913
1914-1915	2,724,913	585,605	6,822,540	— 4,097,627	446,230,848	1914
1915-1916	3,441,183	1,950,937	4,309,831	— 868,648	431,631,760	1915
1916-1917	7,990,435	7,121,568	997,335	6,993,100	243,646,480	1916
1917-1918	4,926,154	3,311,591	434,049	4,492,105	202,329,792	1917
1918-1919	13,659,157	9,915,131	1,939,062	11,720,095	176,809,696	1918

TABLE XVII.—Summary of Canadian Foreign Trade in Provisions—Concluded.

CHEESE (Pounds).

Fiscal Year	Canadian				British	
	Total Exports	Exports to United Kingdom	Total Imports	Net Exports	Total Imports	Calendar Year
1909–1910	180,959,886	179,937,468	683,778	180,176,108	267,690,080	1909
1910–1911	181,895,724	180,658,059	866,653	181,029,071	275,110,080	1910
1911–1912	163,450,684	162,395,097	919,189	162,531,495	263,012,512	1911
1912–1913	155,216,392	153,886,885	1,495,758	153,720,634	258,584,144	1912
1913–1914	144,478,340	142,138,799	1,512,108	142,966,232	257,302,080	1913
1914–1915	137,601,661	135,900,614	1,162,465	136,439,196	272,592,768	1914
1915–1916	168,961,583	167,414,411	971,821	167,989,762	304,372,032	1915
1916–1917	180,733,426	179,568,863	785,221	179,948,205	291,661,888	1916
1917–1918	169,530,733	168,240,447	343,269	169,187,484	329,959,392	1917
1918–1919	152,207,037	120,056,420	172,943	152,034,094	263,995,536	1918

EGGS (Dozen).

1909–1910	160,650	33,465	884,078	— 723,428	177,104,310	1909
1910–1911	92,164	7,067	2,378,640	— 2,286,476	183,441,370	1910
1911–1912	203,231	129,830	7,552,248	— 7,349,017	190,578,970	1911
1912–1913	147,419	51,294	13,240,111	—13,092,692	190,850,320	1912
1913–1914	124,002	–	11,274,036	—11,150,034	215,799,500	1913
1914–1915	3,592,899	3,100,247	4,534,611	— 941,712	179,048,050	1914
1915–1916	7,898,322	7,565,884	3,783,952	4,114,370	102,460,260	1915
1916–1917	5,167,343	4,843,115	3,038,843	2,128,500	66,063,770	1916
1917–1918	4,896,793	4,056,232	4,274,452	622,341	49,224,020	1917
1918–1919	733,445	632,921	1,755,122	— 1,021,677	26,564,150	1918

MUTTON (Pounds).

1909–1910	70,232	–	2,094,023	— 2,023,791	547,329,104	1909
1910–1911	17,865	–	2,708,161	— 2,690,296	622,296,080	1910
1911–1912	49,107	–	3,950,805	— 3,901,698	613,156,768	1911
1912–1913	45,914	–	5,649,118	— 5,603,204	576,163,616	1912
1913–1914	65,167	–	5,610,812	— 5,545,645	606,649,456	1913
1914–1915	1,064,963	–	3,451,812	— 3,386,849	589,232,560	1914
1915–1916	99,593	–	2,841,858	— 2,742,245	533,936,368	1915
1916–1917	167,993	89,249	2,458,104	— 2,290,111	412,201,776	1916
1917–1918	855,517	184,513	2,298,630	— 1,443,113	293,475,168	1917
1918–1919	1,933,308	10,645	5,928,089	— 3,994,781	238,095,536	1918

WOOL (Pounds).

1909–1910	2,320,746	490,404	7,427,079	— 5,106,333	803,432,548	1909
1910–1911	1,196,924	780,024	6,422,395	— 5,225,471	797,418,403	1910
1911–1912	747,336	299,167	7,195,436	— 6,448,100	794,514,850	1911
1912–1913	976,606	697,390	9,209,170	— 8,232,564	806,855,687	1912
1913–1914	2,841,184	448,957	7,252,119	— 4,410,935	800,580,815	1913
1914–1915	5,659,970	560	13,193,986	— 7,534,016	712,618,116	1914
1915–1916	4,546,121	155	21,140,729	—16,594,608	926,380,036	1915
1916–1917	5,836,764	–	14,581,159	— 8,744,395	618,946,684	1916
1917–1918	10,576,627	–	11,537,996	— 961,369	623,232,601	1917
1918–1919	4,881,839	277,100	15,576,738	—10,994,899	413,453,747	1918

TABLE XVIII.—Wholesale Prices in Canada.

Average Price	CATTLE				BEEF			
	Choice Butchers — Montreal	Choice Steers — Toronto	Western Butchers Prime — Winnipeg	Choice Butchers — Calgary	American Plate — Halifax	Canadian Choice Plate — Halifax	Canadian Plate — Montreal	Dressed Hind-quarters — Toronto
	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per bbl.	$ per bbl.	$ per 200 lb. bbl.	$ per cwt.
1914								
January	8·375	8,688	7·125	6·735	24·5	24·25	21·5	15·75
February	8·400	8·294	7·338	6·950	24·5	23·25	22·0	15·375
March	8·331	8·155	7·422	7·215	24·5	–	22·0	14·60
April	8·625	7·994	7·450	7·150	24·5	22·5	22·0	14·50
May	8·445	8·338	7·388	7·305	24·5	24·0	22·0	15·563
June	8·938	8·290	7·435	7·406	24·5	24·0	22·0	16·2
July	8·675	8·450	7·094	7·031	23·0	23·0	23·5	16·0
August	8·875	8·555	7·050	6·385	28·0	23·0	25·3	16·0
September	8·750	8·719	7·000	6·813	–	–	25·5	15·5
October	8·190	8·231	6·188	6·575	27·0	25·0	25·5	14·0
November	7·725	8·050	5·865	6·200	27·0	25·0	25·5	13·7
December	7·875	7·813	6·188	5·933	27·0	25·0	25·5	13·5
Yearly Average	8·446	8·292	6·961	6·814	25·36	24·2	23·16	15·063
1915								
January	7·875	7·888	6·70	6·063	27·0	25·0	–	13·875
February	7·75	7·659	6·825	6·656	27·0	25·0	–	13·25
March	7·855	7·580	6·96	7·040	25·0	25·0	–	12·9
April	8·063	7·613	7·444	7·138	25·0	23·0	–	12·75
May	8·675	8·105	8·59	7·88	21·0	20·0	–	15·2
June	8·750	8·294	8·313	7·906	24·0	20·0		15·0
July	8·788	8·625	7·1	7·269	23·5	21·0	–	15·375
August	8·775	8·435	7·111	6·805	24·0	21·0	–	15·35
September	8·031	8·031	6·6	6·419	24·0	21·0	–	15·0
October	7·531	7·794	6·563	5·738	24·0	21·0	–	14·75
November	7·350	7·905	6·545	5·91	24·5	24·5	–	14·0
December	8·031	7·963	6·344	6·088	24·5	24·5	–	13·5
Yearly Average	8·121	7·994	7·116	6·751	24·708	22·583	–	14·26
1916								
January	7·905	7·915	6·9	6·356	24·5	24·5	21·0	13·5
February	7·644	7·875	7·313	6·945	24·5	24·5	21·0	13·125
March	8·088	8·006	7·531	7·538	24·5	24·5	21·75	13·563
April	8·969	8·45	7·906	7·565	24·5	24·5	22·0	14·5
May	9,550	9·115	8·43	7·913	24·5	25·0	22·0	16·3
June	10·0	9·906	9·231	8·269	25·25	25·5	22·0	17·25
July	9·4	8·04	7·875	–	25·75	26·5	22·0	16·55
August	8·488	8·125	7·075	6·550	25·75	26·5	22·0	14·438
September	8·125	8·019	6·763	6·575	25·75	26·5	22·75	15·0
October	7·875	7·885	6·465	6·355	26·5	27·05	22·9	15·75
November	8·0	7·875	6·688	6·638	32·0	30·0	24·5	12·5
December	9·063	8·7	7·344	7·125	–	–	25·5	14·125
Yearly Average	8·790	8·42	7·45	7·073	25·773	25·955	22·37	14·58
1917								
January	10·025	9·445	8·8	7·71	32·0	30·0	26·3	16·0
February	10·688	10·219	9·75	8·706	32·0	30·0	28·5	17·0
March	10·969	10·044	9·813	8·806	34·0	31·5	28·5	17·0
April	11·750	11·275	10·750	9·063	37·333	34·666	30·0	18·4
May	12·438	11·625	10·094	9·619	38·0	36·0	34·0	20·875
June	11,688	11·406	11·313	9·625	38·0	36·0	34·5	19·5
July	10·9	11·395	10·25	8·275	38·0	36·0	34·555	19·05
August	10·625	11·975	9·0	7·781	36·0	36·0	35·0	19·0
September	10·5	11·419	9·75	9·45	37·0	36·0	–	19·0
October	10·375	11·250	9·545	9·45	39·0	37·666	–	17·8
November	10·125	11·5	9·844	9·208	38·0	38·0	–	17·0
December	10·35	11·675	9·870	9·675	38·0	38·0	–	18·6
Yearly Average	10·826	11·154	9·978	8·853	36·304	35·077	31·106	18·259
1918								
January	10·7	11·688	10·656	8·75	39·5	39·5	–	21·75
February	11·125	11·469	11·083	9·875	40·0	40·0	–	22·125
March	11·125	11·856	10·938	9·925	40·0	40·0	–	21·0
April	11·656	13·25	11·917	11·375	40·500	41·5	–	22·6
May	13·15	14·60	14·438	12·375	41·0	43·0	–	28·5
June	14·25	14·594	14·813	11·875	41·0	43·0	–	30·625
July	–	13·719	14·561	11·0	42·0	43·0	–	27·7
August	–	13·938	13·688	11·625	43·0	44·0	–	23·5
September	–	13·95	13·813	11·5	43·0	45·0	–	24·4
October	–	13·25	13·125	11·0	43·0	47·0	–	24·0
November	–	13·0	12·406	10·875	44·5	47·0	–	23·0
December	–	14·1	11·250	11·25	46·0	47·0	–	24·250
Yearly Average	12·001	13·288	12·724	10·952	41·958	43·333	–	24·450

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	CATTLE				BEEF			
	Choice Butchers — Montreal	Choice Steers — Toronto	Western Butchers Prime — Winnipeg	Choice Butchers — Calgary	American Plate — Halifax	Canadian Choice Plate — Halifax	Canadian Plate — Montreal	Dressed Hind-quarters — Toronto
	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per bbl.	$ per 200 lb. bbl.	$ per cwt.
1919								
January	12·5	14·53	11·25	12·66	46·0	47·0	–	24·25
February	12·041	13·625	12·75	11·930	45·5	44·25	–	24·0
March	13·286	13·4	13·0	13·736	45·0	43·0	–	25·6
April	14·786	14·875	13·550	13·358	45·0	43·0	–	28·0
May	14·75	14·75	13·25	14·5	45·0	43·0	–	28·0
June	13·5	13·725	12·5	–	45·0	43·0	–	27·2
July	12·214	14·0	11·5	–	45·0	42·0	–	28·5
August	13·0	13·875	11·25	–	45·0	41·0	–	27·0
September	11·625	13·35	10·75	–	39·0	35·0	–	25·8
October	10·208	13·063	10·375	–	36·0	36·5	–	24·0
November	–	13·03	10·125	–	32·0	33·0	–	19·5
December	12·883	13·325	10·69	12·563	31·0	30·5	–	22·25
Yearly Average	12·799	14·129	11·749	13·119	38·375	40·104	–	25·342

Average Price	BEEF		VEAL	HOGS			PORK	
	Dressed Fore-quarters — Toronto	Dressed No. 1 — Winnipeg	Dressed Veal — Toronto	Dressed Hogs — Toronto	Select Hogs — Toronto	Choice Hogs — Winnipeg	P. E. I. Mess Pork — Halifax	Heavy Canadian Short Cut mess — Montreal
	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per bbl.	$ per bbl.
1914								
January	12·5	9·875	13·5	12·3	8·886	7·85	28·5	29·5
February	12·125	12·375	13·5	12·5	7·34	8·0	28·5	29·0
March	11·345	12·375	13·5	12·4	8·825	8·50	28·5	29·0
April	11·25	11·875	13·5	11·286	8·764	8·25	28·5	29·0
May	11·0	12·250	13·5	12·0	8·300	8·05	28·0	29·0
June	11·3	11·875	13·5	11·51	7·636	7·35	29·0	29·0
July	11·25	11·875	14·5	12·025	8·550	7·4	27·5	27·875
August	11·25	11·875	14·5	12·5	9·117	8·15	30·0	28·6
September	12·125	12·25	14·5	12·75	8·875	8·875	30·0	29·5
October	11·875	12·25	14·5	10·28	7·69	7·5	30·0	29·5
November	11·2	12·25	13·7	10·5	7·13	6·5	30·0	29·0
December	10·813	12·25	13·5	9·781	5·71	6·65	30·0	27·75
Yearly Average	11·495	11·948	13·833	12·048	8·292	7·756	29·042	28·913
1915								
January	10·375	12·25	13·375	10·75	8·686	6·75	24·0	26·75
February	9·75	12·375	13·25	10·75	7·386	7·15	24·0	26·0
March	9·4	11·500	13·25	10·425	7·679	7·15	24·0	32·857
April	9·125	11·875	12·0	11·094	8·513	8·0	24·0	26·438
May	11·1	12·375	10·75	11·95	8·764	8·0	24·0	27·25
June	11·25	12·375	10·50	12·625	8·75	8·65	24·0	28·5
July	11·313	12·375	10·625	12·375	8·7	8·425	24·0	28·167
August	11·025	12·375	11·1	12·575	8·688	7·75	24·0	27·571
September	10·5	12·375	10·75	12·625	9·088	9·0	24·0	27·25
October	10·25	12·375	10·50	13·475	9·429	9·375	23·5	28·05
November	10·1	12·125	10·0	12·938	8·925	8·125	25·0	28·25
December	10·0	12·25	10·25	12·406	8·463	9·125	25·0	28·25
Yearly Average	10·353	12·218	11·375	11·802	8·469	8·125	24·125	27·312
1916								
January	10·0	11·25	10·5	12·99	9·278	9·0	25·0	30·375
February	10·0	11·25	10·875	13·375	9·592	9·5	25·0	31·375
March	10·0	11·875	11·525	13·875	10·24	10·175	31·0	32·188
April	10·5	11·875	11·5	14·75	10·76	10·950	31·0	33·0
May	11·5	11·875	11·75	15·25	10·707	10·75	32·0	33·5
June	11·75	11·875	12·75	14·25	10·338	9·75	32·5	33·5
July	11·66	14·25	12·75	14·75	10·8	10·75	34·5	33·5
August	10·25	14·25	12·75	15·875	11·686	11·85	34·5	34·5
September	9·625	14·25	12·75	15·313	11·338	11·75	34·5	34·5
October	10·4	14·25	12·75	15·050	10·55	10·0	34·5	34·7
November	10·75	14·25	12·875	14·875	10·46	10·5	38·0	35·5
December	12·0	14·25	13·375	15·5	11·158	11·15	38·5	37·375
Yearly Average	10·72	12·958	12·169	14·649	10·542	10·51	32·583	33·635

TABLE XVIII. – Wholesale Prices in Canada – Continued.

Average Price	BEEF		VEAL	HOGS			PORK	
	Dressed Fore-quarters	Dressed No. 1	Dressed Veal	Dressed Hogs	Select Hogs	Choice Hogs	P. E. I. Mess Pork	Heavy Canadian Short Cut Mess
	Toronto	Winnipeg	Toronto	Toronto	Toronto	Winnipeg	Halifax	Montreal
	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per cwt.	$ per bbl.	$ per bbl
1917								
January	12·95	14·25	13·5	17·0	12·525	12·04	38·5	39·7
February	14·0	14·25	14·0	18·750	13·68	13·56	39·0	40·5
March	14·25	14·5	14·0	19·125	14·85	14·5	40·5	42·0
April	15·6	16·25	14·0	20·200	15·593	14·931	44·833	45·3
May	16·0	16·75	14·563	22·0·0	16·25	15·975	48·0	53·75
June	15·5	16·75	15·438	20·563	14·75	15·05	48·5	55·57
July	14·25	16·75	16·0	21·100	15·35	14·917	48·5	54·4
August	11·75	16·75	16·0	22·125	16·4	16·822	48·5	51·5
September	12·563	16·75	16·5	23·900	17·063	17·925	51·5	52·0
October	13·9	15·55	17·0	23·500	16·9	16·972	52·833	53·1
November	14·0	14·5	17·0	23·500	16·25	15·313	53·5	52·5
December	15·3	14·688	17·0	22·700	16·929	16·875	56·5	52·5
Yearly Average	14·178	15·582	15·434	21·109	15·350	15·317	47·3	49·327
1918								
January	17·0	–	17·563	23·5	17·875	18·25	56·5	52·5
February	16·875	–	18·125	23·750	17·813	18·5	56·5	52·5
March	16·875	–	19·25	24·750	19·094	20·0	56·5	53·5
April	17·2	–	19·25	25·600	19·525	19·5	58·25	57·5
May	18·0	–	19·25	26·375	19·210	20·0	60·0	57·75
June	20·0	–	19·438	25·000	17·25	17·5	60·0	58·0
July	18·1	–	19·75	24·500	17·231	17·5	60·0	56·4
August	16·5	–	19·5	24·500	18·91	19·75	60·0	56·0
September	16·5	–	20·7	25·100	18·475	19·0	60·0	–
October	16·5	–	20·7	25·500	17·669	18·0	58·0	–
November	16·5	–	21·0	23·500	17·464	17·5	58·0	53·0
December	17·75	–	21·5	23·500	17·35	17·75	54·0	60·0
Yearly Average	17·317	–	19·670	24·631	18·155	18·604	58·146	55·715
1919								
January	17·75	–	21·5	23·75	16·125	16·25	54·0	60·0
February	17·5	–	21·0	22·0	16·375	16·25	54·0	52·0
March	17·4	–	21·0	23·1	17·375	18·125	54·0	52·0
April	18·0	–	21·0	25·625	20·625	19·938	54·0	52·0
May	18·0	–	18·5	26·5	21·188	20·917	57·333	57·5
June	18·0	–	18·5	28·4	21·55	21·5	64·0	57·5
July	16·0	–	21·875	29·25	22·91	22·25	64·0	59·75
August	16·0	–	21·875	29·25	22·25	21·833	60·0	60·0
September	16·0	–	21·875	27·7	17·85	18·375	60·0	60·0
October	16·0	–	22·5	25·0	16·844	17·1	51·0	52·75
November	14·0	–	22·0	23·0	15·97	15·8	50·0	52·0
December	13·880	–	22·0	21·5	15·875	15·938	50·0	51·5
Yearly Average	16·628	–	21·135	25·423	18·711	18·670	56·028	55·543

Average Price	PORK		LARD	SHEEP	MUTTON	LAMB	FOWLS	
	Bacon, English Boneless Breakfast	Hams, Medium size	Pure, in Tierces	Ewes, Light	Dressed Mutton	Dressed Lambs	Fowls	Dressed Fowls
	Montreal	Montreal	Toronto	Toronto	Toronto	Toronto	Montreal	Montreal
1914	cts. per lb.	cts. per lb.	cts. per lb.	$ per cwt.	$ per cwt.	$ per cwt.	cts. per lb.	cts. per lb.
January	18·0	18·3	14·2	6·25	11·0	16·5	12·3	16·3
February	18·0	18·0	14·4	6·594	11·0	17·25	12·0	17·4
March	17·9	18·0	14·3	6·675	11·25	17·25		18·0
April	17·3	18·0	13·4	7·125	11·0	7·25	–	18·0
May	17·3	18·0	12·9	7·156	11·0	14·625	–	18·0
June	17·3	18·0	12·6	5·775	11·0	x23·0	–	18·0
July	16·9	18·0	11·9	5·719	11·4	20·625	–	17·3
August	20·0	19·4	12·5	5·925	11·2	18·0	–	17·0
September	20·8	19·8	13·1	5·813	11·0	15·5	–	17·0
October	19·8	18·5	12·9	5·688	11·0	14·125	–	14·0
November	18·3	18·5	12·5	5·625	11·0	14·2	–	12·3
December	17·6	17·0	11·8	5·5	11·0	14·25	10·5	12·0
Yearly average	18·3	18·3	13·0	6·149	11·091	16·995	11·5	16·3

x June 1914, quoted as spring lamb.

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	PORK		LARD	SHEEP	MUTTON	LAMB	FOWLS	
	Bacon, English Boneless Breakfast	Hams, Medium Size	Pure, in Tierces	Ewes Light	Dressed Mutton	Dressed Lambs	Fowls	Dressed Fowls
	Montreal	Montreal	Toronto	Toronto	Toronto	Toronto	Montreal	Montreal
	cts. per lb.	cts. per lb.	cts. per lb.	$ per cwt.	$ per cwt.	$ per cwt.	cts. per lb.	cts. per lb.
1915								
January	17·0	16·5	11·9	5·594	11·0	14·625	11·0	14·0
February	17·0	16·5	11·9	5·719	11·0	14·5	11·0	15·5
March	17·0	16·4	11·9	6·77	11·2	16·5	–	17·4
April	18·3	16·3	12·1	7·5	12·0	17·25	–	17·6
May	*19·0	16·5	12·4	7·5	13·6	18·05	–	17·8
June	20·0	17·0	12·8	6·135	12·625	x21·5	–	18·1
July	20·0	17·9	12·0	6·0	13·0	20·75	–	18·5
August	19·6	17·9	12·1	6·05	13·0	18·4		18·5
September	19·1	17·3	12·2	5·969	12·5	14·75	–	18·5
October	19·9	17·4	12·3	5·938	12·0	14·0	–	18·5
November	20·0	17·0	13·3	6·025	11·4	14·3	–	18·1
December	20·0	17·5	14·0	6·688	12·0	17·0	13·0	18·0
Yearly average	18·9	17·0	12·2	6·339	12·125	16·794	11·7	17·6
1916								
January	20·0	17·8	13·8	7·575	12·6	18·65	12·2	18·0
February	20·6	18·1	13·8	8·281	13·25	19·0	17·3	17·5
March	21·5	18·3	13·8	8·719	14·625	19·938	18·5	20·0
April	22·5	19·2	15·4	8·75	15·0	20·25	18·5	20·5
May	23·0	19·5	16·6	10·85	15·0	20·5	–	20·5
June	24·3	21·0	17·1	8·875	15·0	20·5	–	24·8
July	24·7	22·1	16·9	7·75	15·0	21·9	–	25·0
August	25·3	23·0	17·0	8·063	15·0	21·25	–	23·5
September	25·3	23·3	17·1	7·313	15·0	17·875	–	16·3
October	25·3	24·0	17·4	7·594	15·0	17·5	–	14·0
November	25·5	24·0	19·9	8·425	15·0	18·0	14·5	14·0
December	26·3	24·0	20·8	9·031	15·0	19·438	16·0	14·0
Yearly average	23·8	21·2	16·6	8·356	14·606	19·590	16·5	19·5
1917								
January	27·2	24·2	21·6	9·55	15·0	20·8	17·9	16·8
February	28·0	25·8	21·8	10·313	15·0	21·75	17·5	20·0
March	28·0	26·0	22·8	10·688	15·0	22·6	–	20·0
April	28·4	26·6	25·5	11·275	17·0	22·5	–	20·0
May	32·2	28·5	27·1	15·625	17·0	24·5	–	20·0
June	34·0	29·0	27·4	13·188	16·25	22·5	–	20·0
July	34·3	29·2	27·1	11·35	16·0	21·1	–	20·5
August	35·0	28·8	25·7	11·5	16·0	20·25	–	21·0
September	35·4	29·3	25·9	11·125	16·25	21·0	22·5	21·0
October	38·9	30·3	27·0	11·8	17·0	21·0	21·0	21·0
November	40·5	31·5	27·3	13·625	17·0	21·0	22·0	20·7
December	40·5	31·1	28·3	14·25	17·0	21·0	21·0	22·1
Yearly average	33·6	28·3	25·7	11·880	15·837	21·557	19·4	21·0
1918								
January	40·3	30·4	28·9	15·25	17·0	28·25	–	23·1
February	40·5	31·0	29·4	14·75	17·5	28·25	–	27·0
March	40·5	33·0	30·0	14·5	21·0	29·0	–	27·1
April	40·7	33·9	31·3	15·1	21·3	29·4	32·5	31·0
May	41·0	34·5	31·5	15·42	22·5	31·0	32·5	32·0
June	41·5	34·5	31·3	16·063	22·5	33·0	31·0	32·0
July	41·7	34·8	30·7	14·208	22·1	31·75	28·4	–
August	41·8	35·5	30·8	14·125	21·5	30·0	27·5	–
September	41·8	35·8	30·8	14·125	21·5	26·5	27·4	–
October	42·5	35·5	31·1	12·938	21·5	26·5	–	28·5
November	42·5	35·5	31·3	10·313	20·0	22·5	–	27·4
December	42·5	35·5	30·9	9·550	20·0	22·5	–	26·2
Yearly average	41·4	34·2	30·6	13·862	20·7	28·221	29·8	28·3
1919								
January	41·9	34·8	29·5	10·22	20·0	26·25	26·0	26·0
February	39·6	32·5	25·8	10·0	20·0	27·5	28·7	28·5
March	41·2	34·5	27·5	12·0	20·0	28·1	31·2	29·7
April	43·5	37·3	29·3	14·0	20·25	29·0	–	31·8
May	43·8	38·0	31·5	15·066	20·5	30·5	35·5	33·5
June	44·9	40·5	35·2	11·0	20·5	30·5	36·0	36·1
July	46·6	42·8	35·8	10·25	20·5	30·5	33·0	34·0
August	49·4	43·9	37·1	9·75	18·75	28·5	33·0	36·0
September	48·2	39·1	35·2	8·5	16·0	23·2	33·3	33·4
October	44·6	33·5	31·3	8·5	14·5	31·25	–	20·3
November	43·9	33·5	29·3	8·375	14·5	20·75	–	24·0
December	40·4	32·2	29·3	8·75	14·5	23·88	–	24·3
Yearly average	44·0	36·9	31·3	10·534	18·333	26·66	32·1	29·0

x June 1915 quoted as spring lamb.

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	FOWLS		CHICKENS			TURKEYS		
	Dressed — Toronto	Fowls — Winnipeg	Dressed Chickens — Montreal	Dressed — Toronto	Chickens — Winnipeg	Turkeys — Montreal	Dressed — Montreal	Turkeys — Toronto
1914	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.
January	13·8	12·5	25·0	16·1	16·5	19·9	21·3	20·3
February	15·0	11·0	25·0	17·0	14·5	19·0	22·2	21·0
March	16·0	14·0	25·0	19·1	16·0	24·5	23·0	21·7
April	17·0	13·0	25·0	20·0	16·0	–	23·0	19·5
May	17·0	14·0	25·0	20·0	10·0	–	23·0	19·5
June	16·4	12·5	25·0	21·7	10·0	–	22·8	19·9
July	14·3	–	25·0	26·0	–	–	23·0	19·0
August	14·4	–	21·7	23·6	–	–	23·0	18·0
September	14·0	–	17·9	15·8	–	–	23·0	18·0
October	14·0	11·0	13·5	13·0	–	–	–	18·0
November	11·3	12·0	12·6	14·0	–	17·0	15·0	19·1
December	11·0	–	11·5	14·0	12·5	15·9	15·8	15·6
Yearly Average	14·7	12·5	21·1	18·6	13·6	19·4	21·5	19·2
1915								
January	11·0	–	14·5	14·0	12·5	19·0	21·1	21·0
February	12·9	–	16·0	14·6	12·5	19·0	21·4	21·0
March	13·8	–	18·0	16·5	16·0	–	12·4	21·0
April	14·0	–	22·0	16·5	18·0	–	27·3	22·0
May	15·0	–	24·0	18·5	20·0	–	22·5	24·0
June	15·0	11·0	–	18·5	14·0	–	22·5	24·0
July	16·4	12·0	–	–	14·0	–	22·5	23·6
August	16·4	10·0	–	–	8·0	–	23·1	22·3
September	16·1	10·0	23·0		8·0	–	25·0	21·6
October	18·4	10·0	19·0	19·4	8·0	–	25·0	20·4
November	14·3	10·0	19·0	17·0	13·5	–	21·8	21·5
December	12·9	9·5	19·0	16·2	13·0	21·4	23·6	24·3
Yearly Average	14·5	10·4	19·4	16·9	13·1	20·0	23·3	22·2
1916								
January	13·0	13·5	19·5	16·6	17·0	24·9	25·0	24·5
February	14·6	13·5	20·0	17·0	17·0	26·4	25·0	26·1
March	16·9	13·5	20·0	20·3	17·0	26·3	27·0	25·0
April	19·0	13·5	20·0	22·0	17·0	26·5	27·4	25·0
May	21·0	13·5	20·0	24·0	17·0	–	29·5	25·0
June	22·6	13·0	22·0	26·0	17·0	–	28·1	–
July	21·0	13·5	22·0	–	17·0	–	28·5	–
August	20·4	13·5	22·0	–	17·0	–	28·5	–
September	19·0	15·0	18·7	21·5	18·0	–	25·8	25·0
October	16·0	14·0	17·0	17·7	16·0	–	23·0	24·3
November	15·3	15·0	18·5	16·5	17·0	24·8	23·0	24·8
December	16·0	14·0	21·7	17·0	17·0	28·3	26·8	27·0
Yearly Average	17·9	13·8	20·0	19·6	17·0	26·2	26·5	25·2
1917								
January	15·4	16·3	25·6	16·4	19·5	28·7	31·1	26·6
February	18·0	17·0	27·5	38·5	21·5	29·0	37·0	26·0
March	22·0	17·3	27·5	20·0	23·0	–	32·0	–
April	22·9	17·0	27·5	45·0	–	–	32·1	24·0
May	22·0	17·0	27·5	45·0	–	–	22·5	23·5
June	22·9	23·0	28·3	34·4	–	–	32·4	20·0
July	19·0	21·7	27·5	25·0	–	–	31·5	19·0
August	19·5	18·3	25·0	27·5	19·3	–	31·5	19·0
September	21·0	19·3	25·0	27·3	22·2	–	31·6	–
October	19·0	15·6	25·0	26·5	17·6	–	31·0	–
November	21·3	13·5	26·4	22·7	17·8	28·5	28·8	26·0
December	19·1	15·8	27·6	23·0	17·8	33·4	28·5	30·3
Yearly Average	20·0	17·6	26·8	27·4	19·3	30·2	32·5	24·5
1918								
January	23·1	*	29·0	24·0	*	–	34·8	25·3
February	24·5	*	35·5	28·0	*	–	35·5	26·0
March	26·8	*	37·5	29·1	*	–	35·5	26·4
April	27·0	*	39·5	29·5	*	–	36·3	27·0
May	27·5	*	39·5	32·4	*	–	40·5	26·9
June	28·8	*	39·5	50·0	*	28·0	40·5	26·5
July	29·5	*	39·5	50·0	*	28·0	–	26·5
August	29·5	*	–	–	*	28·0	–	26·5
September	–	*	–	–	*	28·0	–	26·5
October	–	*	40·5		*	–	37·0	30·0
November	26·0	*	40·5	30·0	*	–	36·8	27·9
December	24·5	*	40·5	29·3	*	–	37·7	29·6
Yearly Average	26·7	*	38·2	33·6	*	28·0	37·1	27·1

* No quotations.

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	FOWLS		CHICKENS			TURKEYS		
	Dressed — Toronto	Dressed — Winnipeg	Dressed — Montreal	Dressed — Toronto	Chickens — Winnipeg	Turkeys — Montreal	Dressed — Montreal	Turkeys — Toronto
	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.
1919								
January	26·6	*	40·5	29·6	*	–	38·3	38·7
February	27·4	*	40·5	30·0	*	–	43·0	39·0
March	31·0	*	40·5	30·0	*	–	44·0	43·0
April	35·0	*	39·9	30·0	*	–	47·0	46·5
May	36·0	*	42·0	34·5	*	–	49·0	46·8
June	33·3	*	43·0	49·6	*	–	49·0	37·5
July	27·4	*	43·0	–	*	39·5	49·0	32·5
August	28·5	*	43·0	32·0	*	33·0	49·6	32·5
September	25·6	*	43·3	29·3	*	33·0	45·1	32·5
October	26·7	*	41·0	25·7	*	–	34·5	35·5
November	27·5	*	41·0	28·0	*	–	38·2	33·8
December	28·3	*	38·5	28·0	*	–	46·4	41·4
Yearly Average	29·4	*	41·4	31·5	*	35·2	44·4	38·3

*No quotations.

Average Price	TURKEYS	MILK				BUTTER		
	Turkeys — Winnipeg	Montreal	Toronto	Winnipeg	Victoria	Creamery Prints — Halifax	Dairy — St. John	Creamery Finest — Montreal
	cts. per lb.	cts. per gal.	$ per 8 gal. can.	$ per cwt.	cts. per gal.	cts. per lb.	cts. per lb.	cts. per lb.
1914								
January	18·0	24·0	1·6	2·1	35·0	33·5	27·5	26·3
February	17·5	24·0	1·6	2·1	35·0	33·0	26·5	28·4
March	20·0	24·0	1·6	1·9	35·0	–	27·5	29·1
April	20·0	24·0	1·6	1·8	35·0	31·0	27·5	27·1
May	16·0	16·0	1·3	1·8	30·0	30·0	30·0	23·3
June	15·0	16·0	1·3	1·5	30·0	27·0	27·5	24·4
July	–	17·0	1·3	1·5	30·0	27·0	21·5	24·2
August	–	17·0	1·3	1·7	30·0	28·5	–	27·8
September	–	17·0	1·3	1·7	30·0	–	22·5	28·8
October	14·5	24·0	1·7	2·0	30·0	31·5	22·5	27·7
November	13·5	24·0	1·7	2·1	30·0	–	22·5	27·8
December	16·0	24·0	1·7	2·3	30·0	32·0	–	27·9
Yearly Average	16·7	20·9	1·5	1·9	31·7	30·4	25·6	27·1
1915								
January	15,5	24·0	1·7	2·3	30·0	32·5	26·5	29·9
February	16·0	24·0	1·7	2·3	30·0	32·5	26·5	31·3
March	18·0	24·0	1·7	2·3	30·0	34·0	26·5	34·0
April	19·0	24·0	1·7	2·3	30·0	34·0	27·5	35·0
May	–	16·0	1·3	2·0	30·0	36·0	27·5	30·0
June	14·5	16·0	1·3	2·0	30·0	32·0	27·5	28·3
July	14·0	17·0	1·3	2·0	30·0	30·0	27·0	28·1
August	14·0	17·0	1·3	2·0	30·0	30·0	21·0	27·9
September	13·5	17·0	1·3	2·0	30·0	30·5	21·0	29·8
October	13·5	22·0	1·7	2·5	30·0	32·5	26·5	32·6
November	15·0	24·0	1·7	2·5	30·0	34·5	37·5	32·1
December	15·0	24·0	1·7	2·5	30·0	35·0	27·5	34·3
Yearly Average	15·3	20·8	1·5	2·2	30·0	32·8	26·0	31·1
1916								
January	19·0	24·0	1·7	2·5	30·0	36·0	28·5	34·8
February	19·0	24·0	1·7	2·5	30·0	36·0	28·5	34·2
March	19·0	24·0	1·7	2·5	30·0	36·0	28·5	33·7
April	18·0	22·0	1·7	2·5	30·0	36·0	28·5	32·3
May	18·0	16·0	1·4	–	30·0	33·5	28·5	29·9
June	18·0	16·0	1·4	–	30·0	32·5	25·5	27·2
July	18·0	17·0	1·4	–	30·0	32·5	25·5	30·2
August	18·0	17·0	1·4	–	30·0	32·5	25·5	34·2
September	18·0	17·0	1·4	2·4	30·0	37·0	31·0	33·3
October	19·0	24·5	2·0	2·5	30·0	40·5	–	40·0
November	23·0	25·5	2·0	2·8	30·0	46·5	–	43·3
December	23·0	26·5	2·0	–	35·0	46·0	42·5	43·5
Yearly Average	19·2	21·1	1·6	–	30·4	37·2	29·3	35·1

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price.	TURKEYS.	MILK				BUTTER.		
	Turkeys.					Creamery Prints	Dairy	Creamery Finest
	Winnipeg	Montreal.	Toronto.	Winnipeg.	Victoria	Halifax	St. John	Montreal
1917	cts. per lb.	cts. per gal.	$ per 8 gal. can.	$ per cwt.	cts. per gal.	cts per lb.	cts. per lb.	cts. per lb.
January	23·0	26·5	2·0	2·8	35·0	46·0	41·0	43·3
February	23·0	26·5	2·0	2·8	35·0	45·7	39·9	42·8
March	23·0	26·5	2·0	2·5	35·0	44·5	40·1	43·5
April	23·0	26·5	2·0	2·5	30·0	44·5	40·2	42·6
May	23·0	25·0	2·0	2·4	30·0	45·0	40·8	43·0
June	–	23·0	2·0	1·6	30·0	43·5	37·5	37·9
July	–	25·0	2·0	1·9	35·0	38·5	34·0	36·8
August	–	26·0	2·0	2·0	35·0	42·3	39·8	41·4
September	22·0	26·0	2·0	2·0	35·0	45·0	46·3	42·8
October	20·9	30·0	2·3	2·1	40·0	47·0	45·0	45·2
November	21·3	30·0	2·5	3·0	40·0	48·6	45·0	44·6
December	26·6	30·0	2·5	3·0	45·0	48·5	41·8	43·9
Yearly average	23·0	26·8	2·1	2·4	35·4	45·1	40·9	42·2
1918								
January	–	31·0	2·3	3·0	45·0	48·5	41·0	44·9
February	–	31·0	2·3	3·0	45·0	49·5	41·0	49·0
March	–	31·0	2·3	3·0	45·0	49·5	41·0	49·5
April	–	31·0	2·3	3·0	45·0	51·5	41·0	42·5
May	–	30·0	2·3	3·0	45·0	50·0	41·0	43·8
June	–	30·0	2·3	3·0	45·0	49·0	41·5	44·0
July	–	30·0	2·3	3·0	50·0	48·5	39·0	43·9
August	–	30·0	2·3	3·0	50·0	48·5	38·5	43·6
September	–	32·0	2·3	3·0	50·0	49·0	40·0	46·0
October	–	32·0	2·3	3·0	50·0	51·3	46·5	49·5
November	–	35·0	2·3	3·4	50·0	54·3	46·5	50·3
December	–	33·0	2·3	3·4	50·0	56·3	46·5	52·3
Yearly Average	–	31·5	2·3	3·0	47·5	50·5	42·0	46·6
1919								
January	–	35·0	2·8	3·4	50·0	58·0	46·5	53·3
February	–	35·0	2·8	3·4	50·0	57·0	46·5	55·3
March	–	35·0	2·8	3·4	50·0	59·0	48·5	56·0
April	–	35·0	2·8	3·4	50·0	66·7	54·8	64·0
May	–	30·0	2·4	3·4	50·0	60·5	48·6	53·3
June	–	30·0	2·3	3·4	50·0	56·5	44·0	51·8
July	–	30·0	2·5	3·4	50·0	54·5	44·0	53·5
August	–	30·0	2·6	3·2	50·0	57·0	45·1	54·8
September	–	30·0	2·6	3·2	55·0	58·5	49·5	54·6
October	–	35·0	3·1	3·2	55·0	60·2	50·0	59·3
November	–	40·0	3·1	3·5	55·0	67·5	53·3	65·5
December	–	40·0	3·1	3·5	55·0	72·5	57·5	68·0
Yearly Average	–	33·8	2·8	3·4	51·7	60·7	48·9	57·4

Average Price	BUTTER			CHEESE	EGGS			
	Creamery Solids	Dairy Prints	Fancy Dairy	Western Coloured	Fresh	Henneery	Fresh	New Laid in Cartons
	Toronto	Toronto	Winnipeg	Montreal	Halifax	St. John	Montreal	Toronto
1914	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per doz.	cts. per doz.	cts. per doz.	cts. per doz.
January	28·5	12·8	23·0	13·9	39·0	47·5	47·1	41·9†
February	28·5	21·9	23·0	14·1	35·5	41·5	37·1	42·6†
March	27·1	21·9	23·0	14·6	–	32·5	33·0*	29·3†
April	24·7	21·0	20·5	13·8	19·5	20·0	25·0*	21·0†
May	20·8	19·0	20·5	12·5	19·5	22·0	25·8*	21·6
June	21·0	18·0	20·5	13·1	19·0	20·5	26·5*	22·8
July	22·7	18·5	20·0	13·0	20·0	19·5	26·5*	25·5
August	28·9	21·3	20·0	13·5	26·0	–	28·3*	27·8
September	29·3	24·3	22·0	15·2	–	26·5	28·5	29·9
October	28·1	24·5	23·0	15·4	28·5	26·5	34·0	33·5
November	27·3	24·5	23·0	15·6	–	27·5	42·4	40·0
December	27·0	24·5	23·0	15·8	33·5	–	53·3	53·8
Yearly Average	26·0	21·9	21·8	14·2	26·7	28·7	33·8	31·8

*March to August "Selects." †January, February, March, April not in cartons, price about 3c. lower..

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	BUTTER			CHEESE	EGGS			
	Creamery Solids	Dairy Prints	Fancy Dairy	Western Coloured	Fresh	Henery	Fresh	New Laid in cartons
	Toronto	Toronto	Winnipeg	Montreal	Halifax	St. John	Montreal	Toronto
	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per doz.	cts. per doz.	cts. per doz.	cts. per doz.
1915								
January	29·1	24·8	24·0	16·0	34·0	30·5	42·8	38·1
February	30·0	25·0	24·0	17·0	33·0	30·5	38·8	34·8
March	31·2	27·0	24·0	17·4	27·0	29·5	25·1	25·4
April	31·5	27·5	29·0	17·2	20·0	20·5	22·1	23·0
May	28·6	24·4	29·0	17·5	22·0	20·5	24·3**	23·9
June	27·3	22·3	19·0	17·4	20·1	20·5	24·3	24·3
July	27·0	22·5	20·0	15·0	20·0	18·8	25·5	24·5
August	26·8	24·7	20·0	13·2	23·5	22·5	26·0	25·2
September	28·0	26·5	20·0	14·8	25·5	22·5	27·9	27·6
October	30·3	26·5	23·0	15·5	31·0	29·0	38·8	34·0
November	31·7	28·2	23·0	16·8	35·0	30·5	42·5	42·5
December	32·4	29·0	25·0	17·9	37·1	40·0	50·5	52·1
Yearly Average	29·5	25·8	23·3	16·4	27·3	28·3	32·6	31·3
1916								
January	33·6	30·0	25·0	18·4	37·0	55·0	45·1	42·8
February	32·7	28·0	25·0	18·8	30·0	34·5	33·2	32·8
March	31·5	28·5	25·0	18·8	30·0	32·5	29·6	29·6
April	33·0	29·3	25·0	18·4	–	25·5	26·1	25·8
May	28·9	25·8	23·0	19·3	23·5	22·5	27·3	25·5
June	28·5	25·8	22·0	16·8	28·5	24·5	28·9	28·8
July	28·9	25·5	21·5	14·4	31·5	29·0	35·0	33·4
August	32·0	27·5	22·0	18·7	31·5	31·0	36·0	35·4
September	35·0	29·8	30·0	20·6	34·0	37·0	43·0	39·1
October	39·0	33·8	–	21·7	36·0	40·0	47·5	45·8
November	42·8	36·4	35·0	23·4	44·0	42·5	56·1	53·6
December	44·0	38·5	35·0	25·4	45·0	–	67·5	65·9
Yearly Average	34·0	29·8	26·3	19·8	33·6	34·2	39·5	38·1
1917								
January	41·9	37·5	35·0	25·5	46·0	52·0	66·6	57·7
February	41·3	36·1	34·5	26·3	47·5	50·0	58·2	27·4
March	42·5	37·3	34·8	24·7	41·0	42·5	39·0	38·6
April	41·7	35·7	33·8	25·2	33·7	36·9	38·3	36·3
May	41·5	37·3	36·8	25·1	40·0	35·5	44·0	30·6
June	39·5	34·9	35·3	18·0	38·0	37·4	42·5	38·0
July	37·5	33·5	30·5	21·8	31·0	35·4	45·0	38·2
August	40·8	34·6	33·0	21·8	43·0	39·3	51·7	44·5
September	42·8	35·4	37·3	21·8	47·3	48·3	53·0	46·0
October	44·1	39·8	38·8	21·8	49·0	48·7	53·7	45·0
November	44·5	40·0	40·0	21·8	49·5	52·1	56·1	–
December	44·6	39·7	42·0	21·8	50·0	51·3	63·5	–
Yearly Average	41·9	36·9	36·1	22·8	43·0	44·5	51·8	44·0
1918								
January	46·5	36·0	*	21·8	50·0	65·0	68·8	–
February	48·0	35·5	*	21·8	50·0	65·0	68·8	–
March	49·0	37·0	*	21·8	55·0	57·5	49·8	–
April	45·0	40·5	*	21·8	42·7	48·5	43·8	–
May	45·0	40·5	*	23·0	37·2	–	–	44·8
June	44·5	40·0	*	23·0	42·3	–	–	–
July	45·0	40·0	*	23·0	50·0	–	50·6	52·0
August	45·0	40·0	*	23·0	52·0	–	55·0	53·0
September	46·5	42·5	*	23·0	51·3	52·5	57·6	55·4
October	49·5	45·5	*	25·0	51·0	52·5	61·1	61·3
November	52·0	46·0	*	25·0	51·0	60·0	67·5	72·5
December	52·0	46·0	*	25·0	51·0	65·0	71·8	75·9
Yearly Average	47·3	40·8	*	23·2	40·3	58·3	59·5	59·2
1919								
January	52·0	46·0	*	25·0	65·0	67·0	71·9	72·0
February	52·0	46·0	*	25·0	58·5	66·0	55·4	52·1
March	53·5	46·0	*	25·0	40·5	46·5	44·2	38·1
April	62·5	50·0	*	25·0	42·3	35·8	48·3	46·8
May	56·0	43·5	*	25·0	48·3	47·3	53·6	50·8
June	55·0	48·0	*	25·0	48·0	48·8	53·7	50·0
July	53·5	47·5	*	25·0	46·5	48·7	61·8	54·8
August	54·5	48·5	*	25·0	56·0	58·9	63·3	57·9
September	55·5	49·5	*	25·0	63·0	64·9	66·0	60·4
October	58·0	52·0	*	25·0	64·5	61·0	69·3	64·3
November	62·0	56·5	*	28·5	65·0	67·3	80·5	81·4
December	–	–	*	28·5	66·5	83·8	91·9	90·0
Yearly Average	55·9	48·5	*	25·6	55·3	58·0	63·3	59·8

* No quotations. **May "Selects."

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	EGGS			WOOL		HIDES			TALLOW
	Selects — Toronto	Storage — Toronto	Fresh — Winnipeg	Ontario Washed — Toronto	Ontario Unwashed — Toronto	No. 1 Inspected Steers and Cows — Toronto	Calfskins Green No. 1 — Toronto	Horsehides No. 1 — Toronto	Rendered No. 1 Stock in bbl. Toronto
	cts. per doz.	cts. per doz.	cts. per doz.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	$ per hide	cts. per lb.
1914									
January	32·9	35·5	36·5	26·5	17·1	13·5	16·5	4·3	6·1
February	35·3	32·8	33·0	26·5	17·1	13·5	16·5	4·3	6·1
March	33·5	32·0	30·0	26·5	17·1	14·0	17·3	4·3	6·1
April	–	–	18·0	26·5	17·1	14·0	17·3	4·8	6·4
May	–	–	19·0	26·5	19·5	14·0	17·3	4·8	6·8
June	22·5	–	20·0	27·5	19·5	14·0	17·3	4·8	6·5
July	23·8	–	19·0	27·5	19·5	14·5	17·3	4·8	6·5
August	25·3	–	17·0	28·5	19·5	14·0	16·0	4·8	6·5
September	26·1	–	19·5	28·5	20·0	14·0	16·0	4·8	6·5
October	31·0	25·5	20·5	28·5	20·0	14·0	16·0	4·6	6·5
November	31·7	29·3	20·5	28·5	20·0	14·5	16·0	4·3	6·1
December	32·5	29·5	22·0	29·5	21·0	15·0	17·0	4·3	6·1
Yearly Average	30·0	30·6	22·9	27·6	19·0	14·1	16·7	4·5	6·4
1915									
January	31·6	29·4	45·0	29·5	21·0	15·0	17·0	4·6	6·3
February	31·0	28·0	40·0	30·5	22·0	16·5	17·0	4·6	6·3
March	23·2	24·0	30·0	30·5	22·0	17·5	18·0	4·6	6·3
April	21·5	–	16·5	33·5	24·5	15·0	16·0	4·5	6·3
May	21·9	–	18·0	30·5	22·5	14·0	15·0	4·3	6·3
June	23·0	21·5	16·0	27·5	21·5	14·0	15·0	4·3	6·3
July	23·5	21·6	15·5	28·5	20·0	14·0	14·0	4·3	6·3
August	24·3	22·7	14·5	41·0	31·0	15·0	15·0	4·3	6·3
September	25·5	24·6	18·0	41·0	31·0	18·0	15·0	4·3	6·0
October	†31·1	26·0	22·0	42·5	32·0	18·0	15·0	4·3	6·0
November	†32·5	30·5	25·0	42·0	32·0	18·0	15·0	4·3	6·0
December	†33·3	30·5	39·0	42·0	32·0	18·0	15·0	4·3	6·0
Yearly Average	26·8	26·4	25·0	35·7	26·7	16·1	15·6	4·4	6·2
1916									
January	–	30·1	37·5	42·0	32·0	18·5	18·0	4·8	7·0
February	29·5	27·4	37·5	42·0	32·0	18·5	18·0	4·8	7·0
March	28·4	25·5	22·5	44·5	32·0	18·5	18·0	4·8	7·5
April	24·3	–	19·5	42·5	31·0	18·5	20·0	5·3	8·0
May	24·4	–	19·5	42·0	30·5	19·3	26·0	6·8	9·0
June	27·1	–	–	43·0	32·0	20·0	30·0	6·8	9·5
July	29·3	–	–	49·5	35·5	20·0	30·0	6·8	8·0
August	29·4	–	–	45·5	33·5	20·0	25·0	6·8	8·0
September	35·0	–	30·0	44·5	33·5	20·0	25·0	6·8	8·0
October	42·8	36·4	35·0	44·5	33·5	20·0	25·0	7·0	8·0
November	51·0	38·9	50·0	43·5	33·5	20·0	35·0	7·4	9·0
December	54·8	41·5	50·0	43·5	33·5	25·0	45·0	9·5	9·0
Yearly Average	34·9	34·3	33·5	43·9	32·7	19·9	26·3	6·4	8·2
1917									
January	61·5	41·7	50·0	43·5	33·5	22·0	35·0	8·0	9·6
February	55·5	45·8	50·0	43·5	33·5	20·0	30·0	7·5	9·0
March	41·0	–	45·8	43·5	40·0	20·0	25·0	6·5	9·0
April	38·9	–	30·6	43·5	40·0	20·0	25·0	6·5	9·0
May	44·3	–	36·5	–	44·0	22·0	32·0	6·5	13·5
June	–	–	35·0	65·5	51·0	22·0	27·0	6·5	16·5
July	–	–	28·4	67·5	57·0	20·5	27·0	6·5	13·5
August	–	–	34·0	67·5	59·0	22·0	27·0	6·5	13·5
September	–	–	38·5	67·5	59·0	22·0	27·0	6·3	13·5
October	–	–	44·5	67·5	59·0	20·0	23·0	5·5	13·5
November	55·8	43·5	44·4	67·5	59·0	20·0	23·0	5·5	13·5
December	62·8	43·2	38·0	67·5	59·0	20·0	23·0	6·5	13·5
Yearly Average	51·9	43·3	41·2	58·6	49·5	20·9	27·0	6·5	12·3
1918									
January	*	47·8	*	67·5	59·5	*	*	*	14·4
February	*	50·0	*	67·5	59·5	*	*	*	14·5
March	*	41·0	*	82·5	60·5	*	*	*	14·5
April	*	–	*	82·5	60·5	*	*	*	14·5
May	*	41·4	*	87·5	61·5	*	*	*	20·8
June	*	41·0	*	87·5	64·0	*	*	*	21·0
July	*	52·6	*	87·5	66·0	*	*	*	–
August	*	48·5	*	87·5	66·0	*	*	*	20·5
September	*	49·9	*	87·5	71·5	*	*	*	20·5
October	*	53·6	*	90·5	71·5	*	*	*	–
November	*	54·0	*	90·5	71·5	*	*	*	–
December	*	57·3	*	90·5	71·5	*	*	*	–
Yearly Average	*	48·8	*	84·7	65·3	*	*	*	17·5

* No quotations. † October, November and December are "Select Storage".

TABLE XVIII.—Wholesale Prices in Canada—Continued.

Average Price	EGGS			WOOL		HIDES			TALLOW
	Selects — Toronto	Storage — Toronto	Fresh — Toronto	Ontario Washed — Toronto	Ontario Unwashed — Toronto	No. 1 Inspected Steers and Cows — Toronto	Calfskins Green No. 1 — Toronto	Horsehides No. 1 — Toronto	Rendered No. 1 Stock in bbl. — Tororto
	cts. per doz.	cts. per doz.	cts. per doz.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	$ per hide	cts. per lb.
1919									
January	*	59·3	*	–	–	*	*	*	15·3
February	*	–	*	65·0	45·0	*	*	*	9·0
March	*	–	*	65·0	45·0		*	*	9·0
April	*	–	*	67·5	47·5	*	*	*	8·8
May	*	–	*	70·0	49·3	*	*	*	12·0
June	*	–	*	68·8	51·0	*	*	*	12·5
July	*	–	*	70·0	51·0	*	*	*	13·5
August	*	–	*	70·0	51·0	*	*	*	14·5
September	*	–	*	70·7	50·3	*	*	*	13·5
October	*	58·5	*	70·7	50·0	*	*	*	13·0
November	*	60·1	*	70·7	50·0	*	*	*	–
December	*	60·5	*	70·7	50·0	*	*	*	–
Yearly Average	*	59·3	*	69·0	49·1	*	*	*	12·2

* No quotations.

LEATHERS.

Average Price	No. 1 Spanish Sole for Jobbing — Toronto	No. 1 Slaughter Sole Heavy Trimmed — Toronto	Harness No. 1 U. O. No. 1 R.) — Toronto	Heavy Uppers — Toronto	Average Price	No. 1 Spanish Sole for Jobbing — Toronto	No. 1 Slaughter Sole Heavy Trimmed — Toronto	Harness No. 1 U. O. No. 1 R.) — Toronto	Heavy Uppers — Toronto
1914	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	1916	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.
January	36·5	41·5	39·0	62·5	January	39·0	46·0	52·0	C 61·5
February	36·5	41·5	39·0	62·5	February	39·0	50·0	52·0	61·5
March	36·5	41·5	39·0	62·5	March	44·5	52·0	52·0	61·5
April	36·5	41·5	39·0	62·5	April	44·5	52·0	52·0	61·5
May	36·5	41·5	39·0	62·5	May	A 48·5	B 59·5	55·0	61·5
June	36·5	41·5	39·0	62·5	June	48·5	62·5	55·0	61·5
July	36·5	41·5	39·0	62·5	July	50·5	62·5	55·0	61·5
August	36·5	41·5	39·0	62·5	August	50·5	62·5	55·0	63·5
September	36·5	44·0	40·5	62·5	September	53·5	62·5	57·0	63·5
October	37·5	44·0	40·5	62·5	October	50·5	62·5	57·0	67·5
November	37·5	44·0	40·5	62·5	November	60·5	77·5	64·0	79·0
December	37·5	44·0	43·5	67·5	December	67·5)	87·5)	65·5	79·0
Yearly Average	36·7	42·3	39·8	62·9	Yearly Average	49·5	61·4	56·0	65·3)
					A. Quoted under "Spanish Sides No. 1". B. Quoted under "Trimmed Backs No. 1". C. Prices about 10c. per lb. below previous line.				
1915					1917				
January	39·0	44·0	43·5	67·5	January	67·5	87·5	65·5	79·0
February	39·0	44·0	43·5	72·5	February	67·5	87·5	65·5	79·0
March	39·0	44·0	49·5	72·5	March	67·5	87·5	65·5	79·0
April	39·0	44·0	49·5	72·5	April	67·5	87·5	65·5	79·0
May	39·0	44·0	51·0	72·5	May	67·5	87·5	65·5	79·0
June	39·0	44·0	51·0	72·5	June	67·5	87·5	65·5	77·0
July	39·0	44·0	52·0	72·5	July	67·5	87·5	65·5	75·0
August	39·0	44·0	52·0	72·5	August	67·5	87·5	65·5	75·0
September	39·0	44·0	52·0	72·5	September	67·5	87·5	65·5	75·0
October	39·0	44·0	52·0	72·5	October	67·5	87·5	65·5	75·0
November	39·0	44·0	52·0	72·5	November	67·5	87·5	65·5	75·0
December	39·0	44·0	52·0	72·5	December	67·5	87·5	69·0	75·0
Yearly Average	39·0	44·0	50·0	72·1	Yearly Average	67·5	87·5	65·8	76·8

TABLE XVIII.—Wholesale Prices in Canada—Continued.

HIDES AND LEATHER. (Based on quotations from the "Trade Bulletin," Montreal.)

Average Price	No. 1. Green Hides	No. 2. Green Hides	No. 3. Green Hides	Calfskins No. 1	Calfskins No. 2	Lamb-skins	Sheep-skins
1917	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb	cts. per lb.	$ per skin.	$ per skin.
January	25½	24½	23½	37	35	3·80	–
February	25½	24½	23½	38	36	3·90	–
March	25½	24½	23½	42½	40½	3·90	–
April	26½	25½	24½	41	39	3·95	–
May	26½	25½	24½	38½	37½	3·95	–
June	25½	24½	23½	32½	30½	3·90	–
July	27	26	25	40	–	0·90	–
August	27	26	25	40	–	1·59	–
September	24	23	22	33½	–	2·41⅔	–
October	24	23	22		27½	–	3·33⅓
November	25½	24½	23½	32	29½	–	4·07½
December	24	23	22	31	29	–	4·50
Yearly average	25½	24½	23½	33½	33⅞	2·35⅝	3·96½
1918							
January	21	20	19½	29	27½	–	4·53½
February	18	17	16	30	27	–	4·50
March	17	16	15	33½	31½	–	4·07½
April	17½	16	15½	49½	38½	–	4·37½
May	19½	18½	17½	48	46	–	4·68½
June	20	19	18	49½	47½	–	4·75
July	21½	20½	19½	51½	49½	–	4·75
August	22	21	20	50	48	–	2·95
September	22½	21½	20½	50	48	–	3·62½
October	23	22	21	50	–	–	3·47½
November	–	–	–	–	–	–	3·28½
December	–	–	–	–	–	–	2·62½
Yearly average	20½	19½	18½	43½	40½	–	3·96½

Average Price.	No. 1 Green Hides	No. 2 Green Hides	No. 3 Green Hides	Calfskins	Calfskins Kips	Lamb-skins	Sheep-skins	Hides Bulls	Hides
1919	cts. per lb.	cts. per lb.	cts. per lb	cts. per lb.	cts. per lb.	$ per skin	$ per skin	cts. per lb.	cts. per lb.
January	–	–	–	–	20	–	2·05	15	16½*
February	–	–	–	43½	–	–	2·00	15	17*
March	–	–	–	48½	–	–	2·68½	14½	16½*
April	21	17	15	52	–	–	3·09½	14½	16½*
May	22	18	17	59	–	–	4·00	–	–
June	27½	25½	20	69½	–	–	4·00	–	–
July	33½	32½	25	79	28½	2·60	4·00	30½	33½†
August	–	–	–	79½	50	2·62½	–	33½	39½
September	–	–	–	75	50	2·50	–	26½	35½†
October	–	–	–	75	50	–	–	26½	35½†
November	–	–	–	75	50	3·00	–	26	34½†
December	–	–	–	73½	41½	3·30	–	24	31½†
Yearly average	–	–	–	66½	41½	2·80½	2·17½	22½	16½* 34½†

*Cows. †Cows and Steers.

TuBLE XVIII.—Wholesale Prices in Canada—Continued.

HIDES AND LFATHER (Based on quotations from the "Trade Bulletin," Montreal)

Average Price.	Oak Bends No. 1	Oak Bends No. 2	Oak Bends No. 3	Hemlock Bends No. 1	Hemlock Bends No. 2	Hemlock Bends No. 3	No. 1 Hemlock Sole	No. 2 Hemlock Sole	No. 3 Hemlock Sole
1917	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.
January	84	79	74½	80½	76	72	57½	55½	52½
February	84	79	74½	80½	76	72	57½	55½	52½
March	84	79	74½	80½	76	72	58⅛	55½	52½
April	84	79	74½	80½	76	72	61	57	54½
May	84	79	74½	80½	76	72	61	57	54½
June	82½	77⅜	72½	78⅝	74½	70⅞	59⅜	55⅜	52½
July	80½	75⅜	71½	77½	72½	68⅝	58⅛	55	52½
August	78	75	70½	76½	72	68	59½	57½	54⅜
September	75	75	70½	76½	72	68	57½	55½	52½
October	–	75	70½	76½	72	68	57½	55½	52½
November	83	76⅜	72	77⅜	73	68⅞	57½	55½	52½
December	83	80	75	80	75	70	57½	55½	52½
Yearly average	82½	77½	72⅛	78⅝	74⅔	70⅔	58½	55⅛	53⅛
1918									
January	83	80	75	80	75	70	57½	55½	52½
February	83	80	75	80	75	70	57½	55½	52½
March	83	80	75	80	75	70	57½	55½	52½
April	83	80	75	80	75	70	57½	55½	52½
May	83	80	75	80	75	70	57½	55½	52½
June	83	80	72½	80	75	70	57½	55½	52½
July	83	80	72½	80	75	70	57½	55½	52½
August	83	80	72½	80	75	70	57½	55½	52½
September	83	80	72½	80	75	70	56	54½	50½
October	83	80	72½	80	75	70	55½	53½	50½
November	83	80	72½	80	75	70	55½	53½	50½
December	83	80	72½	80	75	70	55½	53½	50½
Yearly average	83	80	73½	80	75	70	56⅝	54⅜	51⅜
1919									
January	83	80	72½	80	75	70	55½	53½	50½
February	–	80	72½	80	75	70	55½	53½	50½
March	–	80	72½	80	75	70	55½	53½	50½
April	–	80	72½	80	75	70	55½	53½	–
May	–	80	72½	80	75	70	55½	53½	–
June	90	86	80	87	83	76	58	56	–
July	1·05	1·01	95	93	90½	85½	59½	57½	–
August	1·10½	1·06½	1·00½	95½	93½	89½	60½	58½	–
September	1·12	1·09	1·03	98	96	92	63	61	–
October	1·12	1·09	1·08	98	96	92	63	61	–
November	1·12	1·09	1·03	98	96	92	63	61	–
December	1·10½	1·07½	1·01½	96½	94½	90½	60½	59½	–
Yearly average	1·04⅛	94⅛	87½	88⅛	85½	80½	58½	56½	50½

TABLE XVIII.—Wholesale Prices in Canada—Continued.

HIDES AND LEATHER. (Based on quotations from the "Trade Bulletin," Montreal.)

Average Price.	No. 1 Oak	No. 2 Oak	No. 3 Oak	Prime Slaughtered Oak	Waxed Upper	Smooth Grain	Box Grain	Wax Splits.
1917	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per lb.	cts. per ft	cts. per ft.	cts. per lb.
January	60	58	56	66	79	37½	43	38
February	60	58	56	66	79	37½	43	38
March	59½	58	56	66	79	37½	43	38
April	59½	58	56	66	79	37½	43	38
May	59¼	58	56	66	79	37½	43	38
June	58¾	56½	54½	64½	77½	37½	43	38
July	58	55½	53½	62½	75½	37	42½	38
August	59	56½	53½	61½	75	38	42	38
September	59	56½	53	61½	75	38	42	38
October	59	56½	52½	61½	75	38	42	38
November	59	56½	52½	61½	75	38	42	38
December	59	56½	52½	61½	75	38	42	38
Yearly average	59¼	57¼	54½	63¾	76¼	37½	42⅚	38
1918								
January	59	56½	52½	61½	75	38	42	38
February	59	56½	52½	61½	75	38	42	38
March	59	56½	52½	61½	75	38	42	38
April	59	56½	52½	61½	75	38	42	38
May	59	56½	52½	61½	75	38	42	38
June	59	56½	52½	61½	75	38	42	38
July	59	56½	52½	61½	75	38	42	38
August	65	63	59	61½	75	38	39	38
September	64½	62½	58½	61½	75	38	34	38
October	63	61	57	61½	75	38	34	38
November	63	61	57	61½	75	38	34	38
December	63	61	57	61½	75	38	34	38
Yearly average	60½	58½	54½	61½	75	38	39½	38
1919								
January	63	61	57	59½	75	38	34	38
February	63	61	57	59½	75	38	34	38
March	63	61	57	59½	75	38	34	38
April	63	61	57	59½	75	38	34	38
May	63	61	57	59½	75	38	34	38
June	67½	65½	62½	65½	78½	43	44	41
July	69⅝	66½	67⅛	68½	78½	54½	58½	44
August	70⅝	67⅛	64⅛	70	78½	58	63	45
September	73	70	67	70	78½	58	63	45
October	73	70	67	70	78½	58	63	45
November	73	70	67	70	78½	58	63	45
December	71½	69½	65½	70	78½	58	63	45
Yearly average	67¾	65½	62½	65½	77⅛	48½	48¾	41⅓

TABLE XVIII.—Wholesale Prices in Canada—Concluded.

HIDES AND LEATHER (Based on quotations from the "Trade Bulletin," Montreal.)

Average Price.	Belting Butts shoulders on	Belting Butts shoulders off	Harness	Skirtia
1917	$ per lb.	$ per lb.	cts. per lb.	cts. per lb.
January	1·40	1·60	63½	36
February	1·40	1·60	63½	36
March	1·40	1·60	63½	36
April	1·40	1·60	63½	36
May	1·40	1·60	63½	36
June	1·40	1·60	61½	34½
July	1·40	1·60	61½	34
August	1·40	1·60	61½	34
September	1·40	1·60	61½	34
October	1·40	1·60	61½	34
November	1·40	1·60	61½	34
December	1·40	1·60	61½	34
Yearly average	1·40	1·60	62½	34¼
1918				
January	1·40	1·60	61½	34
February	1·40	1·60	61½	34
March	1·40	1·60	61½	34
April	1·40	1·60	61½	35½
May	1·40	1·60	61½	37
June	1·40	1·60	61½	38
July	1·40	1·60	61½	38
August	1·40	1·60	65½	38
September	1·40	1·60	66½	38
October	1·40	1·60	66½	38
November	1·40	1·60	66½	38
December	1·40	1·60	66½	38
Yearly average	1·40	1·60	63½	36¾
1919				
January	1·40	1·60	66½	38
February	1·40	1·60	66½	38
March	1·40	1·60	66½	38
April	1·40	1·60	–	38
May	1·40	1·60	–	38
June	1·40	1·60	–	34½
July	1·43½	1·63½	–	36½
August	1·45	1·65	–	37½
September	1·45	1·65	–	37½
October	1·45	1·65	–	37½
November	1·45	1·65	–	37½
December	1·45	1·65	–	37½
Yearly average	1·42½	1·62½	66½	37½

TABLE XIX.—Average Yearly Retail Prices of Provisions at Various Canadian Cities, 1914-1919.

(Compiled from Monthly Quotations in the "Labour Gazette")

Commodity.	Unit	Year	Halifax	Charlottetown	St. John	Quebec	Montreal	Ottawa	Peterboro	Toronto	London	Sault Ste Marie	Ft. William	Winnipeg	Brandon	Regina	Saskatoon	Calgary	Edmonton	Vancouver	Victoria
			cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
Beef, sirloin steak	lb.	1914	24·5	20·0	25·8	18·0	24·0	27·4	24·5	26·9	25·3	28·0	23·7	27·0	25·0	30·0	27·4	22·9	23·6	25·0	26·1
		1915	25·0	18·9	25·0	19·0	21·7	25·5	23·8	22·5	25·3	25·3	25·0	27·0	24·5	29·8	26·5	21·8	21·0	22·7	22·8
		1916	26·7	20·3	26·8	22·2	24·3	28·3	26·3	29·4	26·8	26·5	27·4	27·0	26·8	29·4	26·3	24·8	23·1	23·5	23·8
		1917	33·6	26·0	31·7	25·3	29·8	34·7	30·0	32·5	31·1	33·8	28·8	29·1	27·3	33·8	30·1	29·4	27·7	28·6	26·3
		1918	38·8	28·5	38·1	28·8	31·5	37·8	38·5	37·2	37·3	40·5	39·4	35·7	34·2	37·9	39·6	38·4	34·4	38·8	37·8
		1919	59·4	29·3	44·2	32·4	27·7	36·5	42·1	33·0	37·8	42·6	36·0	38·2	36·1	40·0	39·8	39·8	33·9	41·0	40·4
Beef, medium chuck	"	1914	18·7	16·0	15·4	15·8	18·0	17·6	16·0	15·8	18·0	18·7	16·5	19·3	18·0	18·8	18·0	15·0	14·7	15·5	15·0
		1915	18·2	20·4	14·6	17·5	13·5	17·2	17·2	14·3	17·8	18·0	16·0	16·8	16·9	16·8	15·7	13·0	14·7	14·6	15·0
Beef, round steak	"	1916	24·7	19·3	23·2	23·6	20·8	23·2	23·8	23·3	23·8	22·8	20·9	24·0	24·8	23·6	20·8	19·8	19·4	21·5	20·3
		1917	30·6	25·8	26·9	25·3	24·9	30·1	28·9	27·0	27·7	31·6	24·7	25·5	24·0	24·5	23·9	25·3	23·2	25·7	23·2
		1918	36·3	28·5	31·8	28·8	28·7	35·3	37·0	33·5	34·9	37·4	34·4	30·5	28·1	28·3	34·3	34·3	30·5	33·5	33·6
		1919	37·6	29·3	37·1	32·3	25·8	34·6	39·2	28·5	34·8	35·7	32·7	30·4	31·1	30·0	34·4	35·3	29·3	35·1	37·1
Beef, rib roast prime	"	1916	22·0	18·9	25·3	22·2	17·8	22·3	19·8	21·4	20·6	19·2	19·9	24·0	22·0	22·8	19·5	20·1	19·3	22·1	19·0
		1917	26·6	23·6	29·0	24·2	21·9	28·6	22·8	26·0	26·1	23·0	23·5	25·3	23·3	24·5	24·4	25·3	24·6	24·7	22·2
		1918	32·2	25·8	32·5	27·7	24·2	31·8	28·5	31·3	31·1	32·4	33·3	31·6	27·5	28·3	33·4	34·2	31·1	33·5	30·7
	"	1919	30·5	28·3	35·0	28·9	21·8	28·0	28·8	29·6	31·4	33·5	31·4	30·0	30·7	28·0	33·0	34·2	30·1	40·7	30·1
Beef, shoulder roast	"	1916	19·2	16·6	15·2	17·9	14·4	18·0	17·4	17·0	18·3	17·5	17·9	17·0	17·9	16·7	15·8	14·1	15·6	15·1	14·8
		1917	23·5	22·8	20·4	19·1	18·6	24·3	20·8	19·6	22·7	21·4	19·9	18·3	19·1	18·2	18·6	19·8	17·0	18·8	18·3
		1918	27·0	24·2	24·3	22·0	22·1	28·1	26·5	25·8	27·7	28·2	29·7	25·3	24·0	23·7	25·4	25·7	22·6	25·6	25·0
		1919	33·0	23·8	25·1	22·9	19·0	24·5	26·8	21·2	25·9	28·7	29·2	22·4	26·6	25·0	25·3	24·8	21·5	24·1	27·8
Veal, roast forequarter	"	1914	12·0	10·0	12·2	17·1	13·0	16·2	17·7	16·9	19·6	21·9	21·0	18·0	18·0	23·5	20·8	20·0	24·8	22·0	25·0
		1915	12·0	9·1	12·0	18·6	14·4	16·6	16·5	15·5	20·0	22·0	20·2	18·0	18·4	19·8	18·7	18·2	19·7	22·4	24·8
		1916	13·3	12·5	13·8	22·5	15·0	19·1	16·6	20·9	20·3	21·7	23·3	18·0	19·8	23·3	17·7	20·5	19·8	22·3	24·5
	"	1917	15·0	16·8	15·5	24·8	18·9	25·8	23·4	25·0	24·8	24·2	26·0	19·2	19·0	25·0	21·2	23·5	21·3	24·3	25·0
		1918	19·9	15·5	19·3	28·3	18·3	29·2	28·2	27·9	28·1	33·5	32·9	26·1	20·3	25·5	27·3	32·0	26·0	29·7	29·8
		1919	24·0	17·2	21·8	24·9	14·8	24·9	30·0	32·5	30·3	33·9	32·7	27·4	30·4	25·0	24·7	27·4	22·0	29·6	32·9
Mutton, leg roast, hindquarter	"	1914	21·1	16·0	19·8	17·7	20·0	21·3	20·3	20·9	21·8	22·8	23·6	23·5	22·0	26·5	26·3	22·0	24·3	22·3	25·0
		1915	20·6	16·0	20·8	19·3	16·5	22·3	19·0	18·8	22·0	20·0	21·6	24·0	21·2	24·9	25·8	20·4	21·2	23·3	25·7
		1916	23·0	15·8	22·9	22·4	21·8	23·8	22·9	27·4	24·0	21·4	24·9	24·4	22·1	29·7	26·4	25·3	23·0	20·0	27·5
		1917	24·9	20·3	27·1	25·8	24·8	32·8	30·4	34·4	28·5	29·0	31·0	31·0	27·1	32·5	30·2	33·2	29·5	32·0	34·2
		1918	35·8	26·7	35·0	27·1	32·8	36·8	35·9	35·7	34·4	37·7	37·3	37·1	36·6	37·1	37·3	41·8	37·5	37·4	43·3
		1919	37·5	27·7	34·6	30·0	33·3	33·5	38·8	32·5	33·3	37·1	38·0	30·1	39·8	35·0	38·2	42·0	36·2	35·2	40·2
Pork, fresh chops	"	1916	20·8	19·3	22·2	20·2	25·8	23·3	23·6	25·4	25·2	24·3	24·0	22·1	20·0	24·5	22·5	24·6	23·3	23·0	23·4
		1917	28·2	26·7	29·1	27·6	34·5	34·5	31·3	31·3	33·9	33·4	32·3	35·2	25·3	31·8	29·0	31·3	33·2	34·8	28·2
		1918	33·8	31·1	35·9	33·4	40·7	39·4	42·0	42·7	41·8	38·8	42·1	40·3	37·1	38·8	42·5	42·4	41·2	44·2	37·8
		1919	35·3	30·9	36·7	32·9	41·5	37·9	43·3	43·8	46·0	41·3	44·7	47·8	38·8	40·0	44·6	48·5	46·6	47·4	46·3

Pork, fresh, roasting	"	1914	18·8	15·0	20·0	19·1	19·3	19·9	20·0	20·0	19·7	21·5	23·5	22·0	19·0	25·0	20·0	20·0	19·3	19·9	23·8
		1915	18·5	15·8	19·2	19·0	18·3	19·6	20·0	18·5	19·0	21·8	19·3	22·3	17·3	18·1	18·2	17·3	16·9	16·2	18·4
		1916	20·0	19·5	21·2	21·4	22·8	21·8	23·4	23·6	23·8	22·1	21·8	22·0	20·0	23·0	21·8	22·9	19·7	20·8	21·5
		1917	27·8	26·7	27·8	28·6	31·9	33·3	30·8	32·5	30·8	31·2	31·3	32·8	25·3	27·0	27·7	33·3	30·6	29·0	27·8
		1918	33·8	30·7	34·9	34·4	38·0	37·3	40·7	38·9	37·6	38·8	38·7	37·7	36·3	35·7	36·2	40·0	35·1	34·2	34·3
		1919	36·0	31·0	35·4	34·1	36·0	35·8	42·1	34·0	40·4	41·3	43·5	40·4	37·3	35·0	38·4	44·9	40·3	41·0	37·3
Pork, salt mess	"	1914	17·4	19·4	18·5	19·3	19·0	19·3	17·3	13·7	20·0	18·3	18·8	18·0	..	22·0	20·0	18·0	19·7	18·5	18·0
		1915	17·0	14·3	18·0	19·4	18·0	18·4	18·0	14·4	21·3	21·8	18·3	18·0	15·7	16·9	20·0	16·3	17·4	18·0	17·7
		1916	17·6	17·7	18·7	21·2	20·3	21·3	19·5	19·5	25·5	22·3	27·5	18·0	18·0	17·0	20·0	20·3	19·1	18·0	18·7
		1917	25·5	26·7	28·1	28·6	29·7	32·4	24·4	28·8	32·8	23·7	27·2	26·1	26·5	17·8	23·6	28·4	28·1	18·0	26·5
		1918	33·3	30·4	37·5	36·2	36·3	37·2	35·0	37·5	37·5	35·0	38·2	35·5	27·5		40·0	35·9	34·3	45·0	36·8
		1919	34·3	32·6	35·0	33·3	35·0	36·8	35·8	38·1	40·0	40·0	39·9	38·5		32·0	38·4	39·0	35·1	42·9	37·4
Bacon, best smoked	"	1914	25·0	23·3	25·0	21·1	24·5	24·3	25·8	22·2	25·0	23·3	29·0	35·0	32·5	32·0	29·9	27·1	27·3	31·6	33·7
		1915	25·0	24·2	25·0	22·0	23·9	26·1	24·5	24·5	26·0	24·0	25·8	35·0	25·4	31·8	30·4	22·4	24·4	32·0	27·0
		1916	26·4	27·4	28·1	24·9	27·5	27·5	28·6	30·3	29·2	26·7	31·7	35·0	30·0	30·1	30·8	28·3	28·3	32·3	29·1
		1917	34·4	36·7	37·2	35·7	37·1	40·5	41·5	39·4	40·8	39·1	41·8	38·2	40·4	45·8	29·2	27·4	41·2	40·6	36·0
		1918	45·0	42·9	48·8	47·8	46·2	50·8	54·8	46·6	50·3	47·0	58·1	48·4	52·9	57·9	56·7	48·7	51·5	51·7	48·8
		1919	48·8	50·3	49·2	49·8	48·6	51·4	55·3	46·9	50·0	53·8	55·1	52·6	55·9	61·3	58·8	55·1	51·4	55·8	56·6
Lard, pure leaf, best	"	1914	17·5	18·0	20·1	24·0	20·0	19·1	19·7	17·2	18·0	17·4	19·5	18·0	20·0	20·0	20·0	15·0	19·2	15·5	17·7
		1915	17·0	18·0	20·0	24·0	19·3	19·3	18·3	15·6	18·0	16·1	20·0	18·0	19·5	18·8	20·0	15·8	15·5	15·5	16·3
		1916	19·3	20·6	21·3	24·0	20·1	20·9	21·7	19·5	20·3	18·8	21·3	19·2	22·0	22·1	20·8	20·4	20·3	20·3	18·3
		1917	28·4	28·8	28·9	27·2	29·2	31·2	31·3	29·9	29·8	29·6	31·9	31·8	30·6	30·2	30·8	30·2	28·8	28·5	27·9
		1918	37·0	34·4	37·8	34·7	35·3	35·2	38·3	37·4	35·5	35·0	38·3	37·2	35·0	36·3	39·2	38·1	31·3	31·4	35·3
		1919	36·9	37·6	37·6	37·8	35·8	41·0	39·1	39·4	38·0	39·2	41·4	41·2	41·5	42·5	39·4	43·6	38·9	32·8	30·7
Eggs, new laid	doz.	1914	34·2	25·8	36·3	34·9	37·4	35·8	30·0	38·0	31·4	36·5	41·6	34·7	35·1	35·4	35·0	37·7	37·1	48·2	45·0
		1915	35·9	26·2	36·3	35·3	34·0	35·0	29·2	35·4	30·3	35·4	36·3	32·7	30·8	30·7	29·7	37·3	31·7	42·3	38·8
		1916	38·3	30·2	42·2	41·2	37·0	39·2	34·7	41·9	35·7	39·4	44·2	40·0	34·8	34·1	35·3	41·7	42·5	46·1	44·5
		1917	47·8	38·7	48·1	52·0	48·4	52·9	45·8	52·8	47·3	56·9	53·2	50·1	42·5	48·1	45·5	51·7	46·3	58·3	53·0
		1918	63·3	49·2	59·2	58·7	54·2	59·2	58·6	61·7	54·6	59·6	68·7	52·1	46·3	45·4	51·7	57·0	54·6	72·9	65·6
		1919	66·7	48·6	61·5	63·8	63·4	68·2	57·8	63·2	56·3	67·0	68·3	65·4	55·4	60·0	60·2	64·1	67·2	75·8	74·2
Eggs, storage	"	1914	29·6	25·7	31·9	20·7	38·0	35·0	32·3	32·9	34·5	29·6	34·1	33·5	33·3	33·3	29·0	33·6	37·1	36·5	35·0
		1915	29·3	27·3	31·1	33·1	30·1	35·0	33·4	32·2	31·4	27·5	31·7	27·7	30·8	23·9	31·0	31·9	25·8	28·8	33·4
		1916	34·1	33·0	31·4	40·0	35·3	38·0	31·2	36·2	42·0	28·6	36·0	33·5	31·9	35·0	28·3	40·0	32·9	34·9	35·5
		1917	43·0	33·5	47·5	48·3	45·0	48·3	47·8	50·0	48·0	41·7	47·5	37·2	33·8	43·8	30·0	43·3	41·9	44·3	45·5
		1918	57·5	48·5	52·5	54·7	54·2	54·3	53·8	54·4	52·5	52·5	61·9	52·3	37·5	45·8	55·0	50·0	42·0	52·8	53·5
		1919	65·0	45·2	62·5	63·3	60·3	55·0	65·7	70·0	59·0	67·5	62·5	61·6	45·0	65·0	63·3	60·7	57·5	66·3	61·9
Milk, delivered	quart	1914	8·7	7·0	8·0	10·3	9·2	8·4	7·0	10·0	7·0	9·8	11·8	9·8	10·0	10·4	10·8	10·0	9·5	10·0	12·5
		1915	9·0	7·0	8·0	10·0	9·2	8·0	7·0	10·0	7·0	9·7	11·0	10·0	10·0	9·9	10·0	10·0	9·1	10·0	10·7
		1916	9·3	7·0	8·2	10·2	9·7	8·3	7·3	10·3	7·6	9·6	10·8	10·1	9·3	9·9	10·0	10·0	9·2	10·2	10·2
		1917	10·5	7·3	10·6	11·3	11·4	9·6	9·7	12·1	9·2	11·4	11·6	11·4	11·0	11·6	11·6	10·9	10·6	12·2	12·3
		1918	13·1	7·8	12·3	12·5	12·8	11·2	11·3	13·7	10·5	13·5	15·9	13·1	12·5	14·1	13·4	12·6	12·5	15·3	15·1
		1919	15·0	10·4	13·6	14·3	13·8	11·8	11·5	15·2	12·5	14·4	16·5	13·8	13·8	14·7	14·9	13·6	14·0	15·0	16·0
Butter, dairy, solids	lb.	1914	29·3	24·8	30·5	28·3	29·0	28·3	28·4	27·8	29·0	27·7	29·4	26·9	29·0	27·1	27·9	25·5	30·6	30·8	35·0
		1915	32·0	26·2	32·1	31·3	29·6	31·6	32·3	31·9	32·8	29·8	32·5	27·0	28·1	28·8	30·8	–	28·8	25·7	34·6
		1916	37·1	30·8	34·9	35·5	33·7	36·0	30·0	36·1	35·8	33·9	37·0	30·6	32·2	32·1	31·4	40·0	33·8	32·0	38·7
		1917	44·5	38·3	45·2	41·3	41·3	45·9	45·7	43·2	45·3	45·1	45·7	35·0	36·0	37·1	40·9	44·2	37·1	41·1	45·6
		1918	52·6	43·4	47·0	45·9	44·7	49·9	50·5	46·2	49·6	48·5	51·5	–	43·8	44·4	46·7	50·8	44·5	45·8	54·0
		1919	59·7	49·2	55·8	54·8	54·3	57·2	58·9	–	57·8	58·8	59·7	–	54·6	50·4	52·3	52·5	43·8	52·2	61·5

Average Yearly Retail Prices of Provisions in Various Canadian Cities, 1914-19—concluded.

(Compiled from Monthly quotations in the "Labour Gazette."

Commodity	Unit	Year	Halifax	Charlottetown	St. John	Quebec	Montreal	Ottawa	Peterboro	Toronto	London	Sault Ste Marie	Ft. William	Winnipeg	Brandon	Regina	Saskatoon	Calgary	Edmonton	Vancouver	Victoria
			cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
Butter, creamery, prints	Lb.	1914	34·2	30·7	34·3	31·7	32·6	31·8	30·8	32·0	32·0	33·3	34·3	32·8	33·3	35·0	37·1	35·2	34·6	39·3	44·6
		1915	35·8	32·5	35·3	33·3	34·0	35·0	34·4	35·3	35·3	35·3	37·4	36·1	35·5	34·6	38·8	37·7	33·8	36·5	40·8
		1916	40·3	36·3	39·2	39·0	39·3	40·0	38·4	40·0	39·3	36·8	42·3	40·7	39·0	38·8	40·2	38·8	40·0	40·2	44·6
		1917	49·4	43·3	49·7	45·7	46·8	49·2	47·4	48·7	47·7	50·4	50·6	46·8	45·1	44·6	47·3	49·2	47·7	48·4	54·6
		1918	57·6	46·9	51·7	49·9	52·1	53·8	53·0	55·0	52·3	54·9	57·7	52·9	53·3	52·9	57·5	56·3	53·9	54·8	64·2
		1919	68·2	58·3	65·1	58·6	60·4	64·4	61·4	63·5	60·8	64·7	67·9	63·8	61·8	63·3	64·6	61·8	61·7	63·2	72·9
Cheese, old	"	1914	20·0	18·8	23·7	20·0	20·0	21·3	20·2	20·8	21·7	21·6	20·3	22·8	21·4	22·1	25·0	22·0	20·0	25·8	26·3
		1915	26·0	26·0	22·4	20·1	22·1	23·2	22·0	23·5	23·8	25·0	25·0	23·0	23·9	24·2	22·5	27·8	21·5	25·8	25·0
		1916	–	21·5	25·4	26·8	26·1	26·9	25·2	25·6	26·7	27·2	26·3	25·8	24·6	25·8	–	31·3	25·3	25·3	26·6
		1917	–	26·3	30·8	33·2	35·2	32·5	33·6	35·8	34·0	31·6	30·0	36·1	32·6	35·4	34·6	35·0	32·3	35 1	34 9
		1918	–	27·6	35·4	35·8	36·3	36·4	35·3	36·9	32·8	30·0	32·1	38·0	35·0	35·0	30·8	32·9	29·0	33·5	35·0
		1919	–	33·0	34·3	36·3	36·7	41·7	39·5	37·3	37·2	37·2	36·9	39·1	35·6	40·0	41·1	43·1	36·4	37·0	38·9
Cheese, new	"	1914	18·0	18·0	20·7	18·0	18·0	19·4	18·5	18·4	19·8	19·1	20·0	20·0	21·5	22·1	23·1	22·0	20·0	21·3	22·2
		1915	22·0	18·0	22·8	18·2	19·3	20·5	20·0	20·4	21·1	23·3	24·2	22·0	–	25·0	24·3	24·0	20·3	23·0	21·3
		1916	25·3	20·3	29·4	22 1	23·5	23·6	23·0	24·3	25·2	23·4	26·3	24·2	–	–	26·1	27·5	23·8	25·7	23·7
		1917	30·8	26·3	28·8	29·2	31·4	27·6	30·0	29·0	30·2	32·0	30·0	31·0	–	35·0	31·1	33·8	31·0	32·7	30·4
		1918	31·8	26·2	34·7	32·0	31·7	31·7	30·9	30·0	30·0	32·1	32·1	30·3	–	35·0	35·0	30·8	31·4	56·7	29·2
		1919	36·3	32·6	36·4	32·3	34·0	34·1	37·5	35·8	34·7	38·0	37·3	35·3	40·0	40·4	38·7	40·2	34·0	34·0	37·6

Chart No. 1.

CANADA'S RANK AS A CATTLE PRODUCER

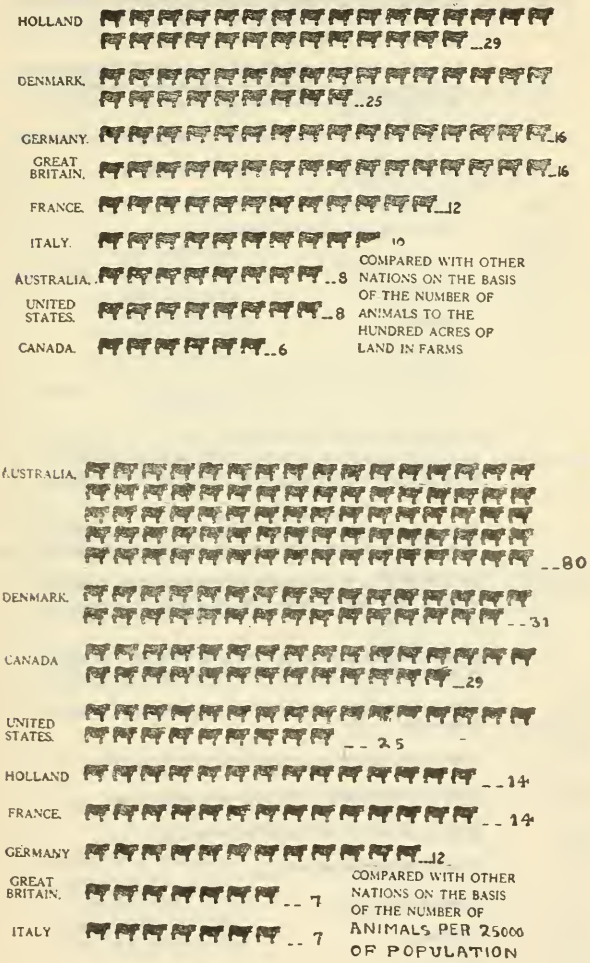
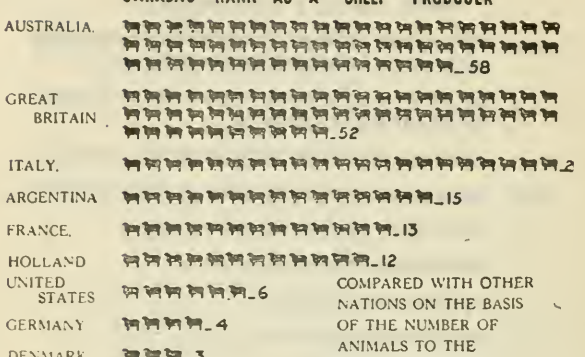


Chart No. 2.

CANADA'S RANK AS A SHEEP PRODUCER



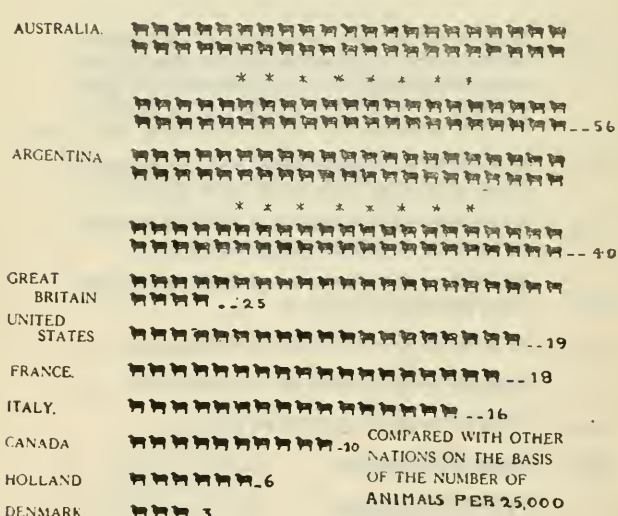
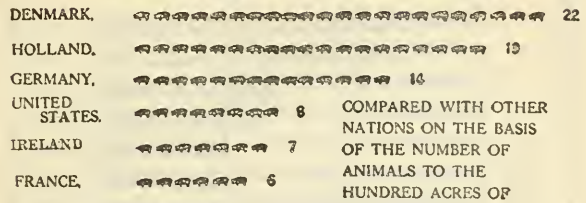
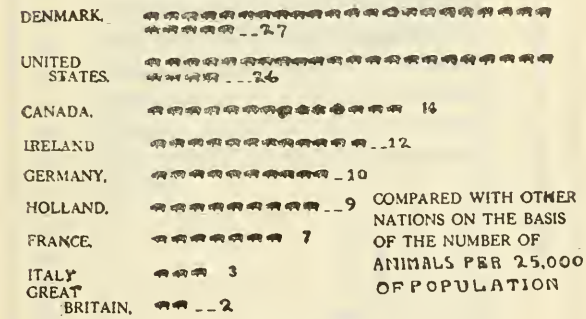
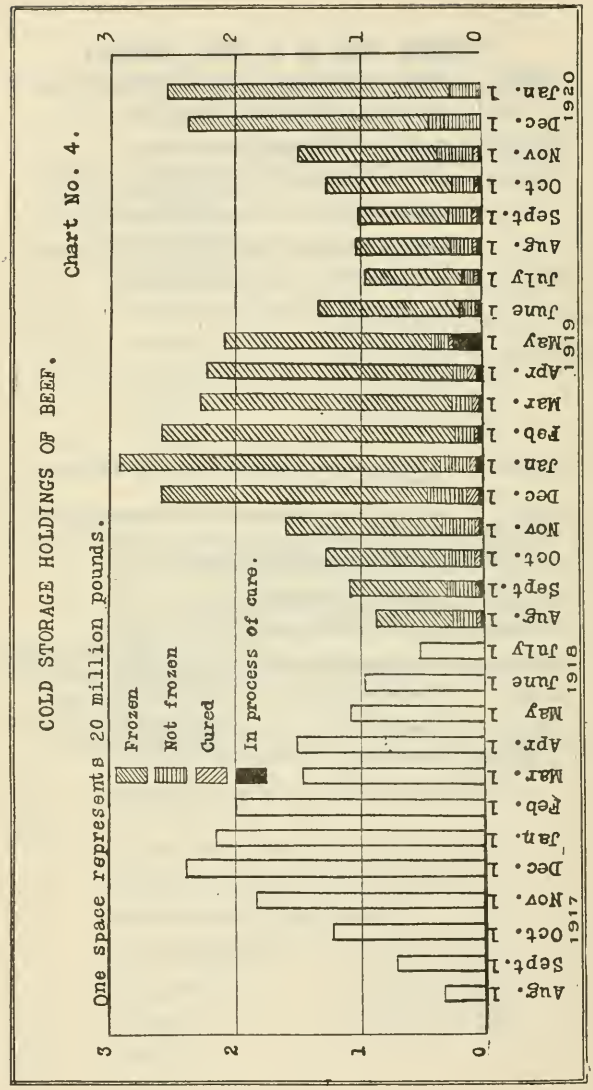


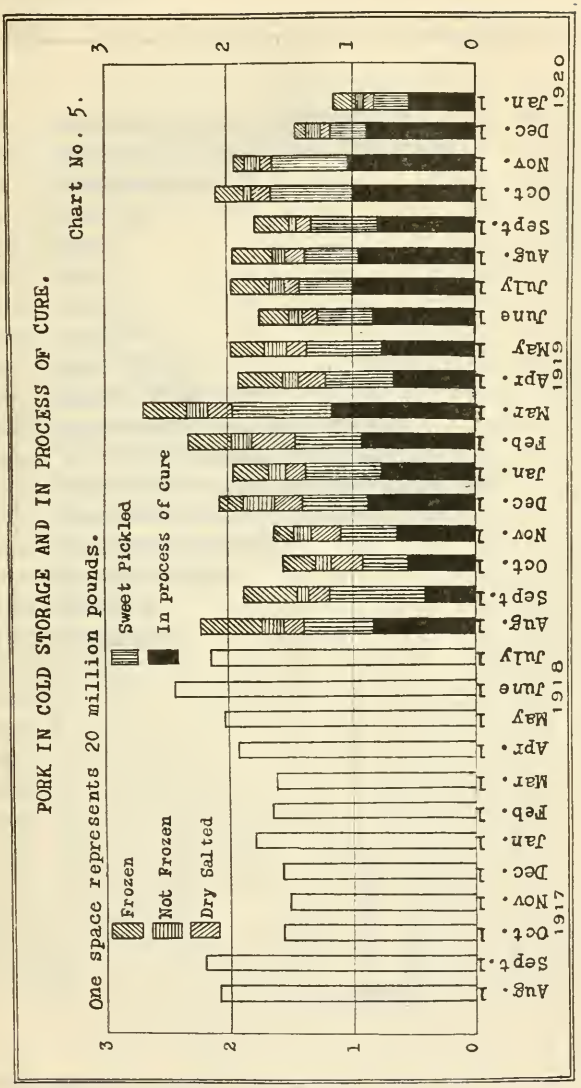
Chart No. 3.

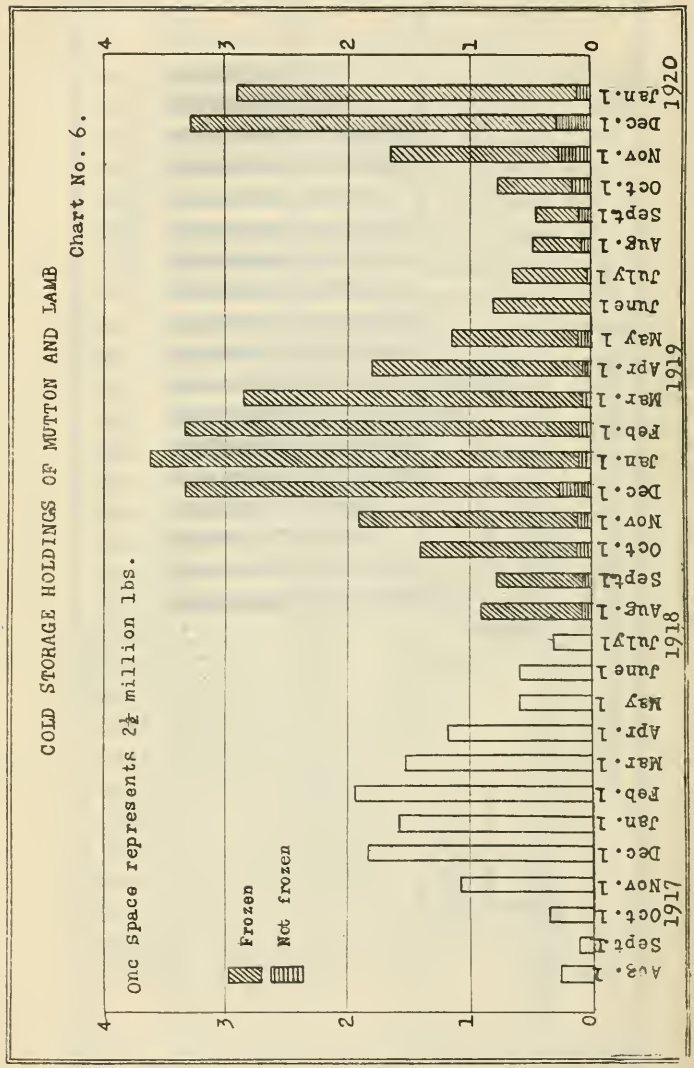
CANADA'S RANK AS A HOG PRODUCER

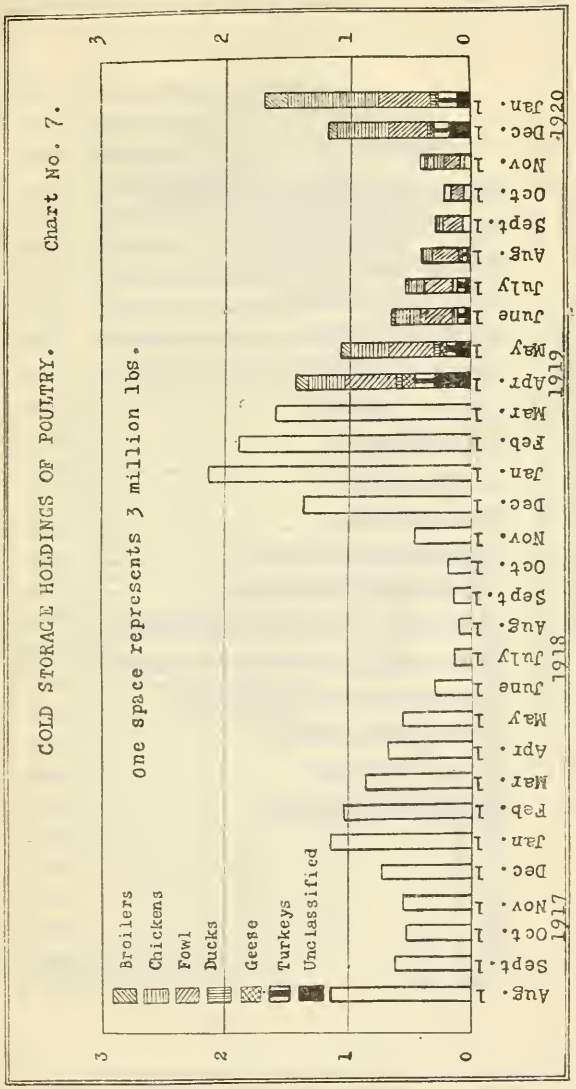

DENMARK. 22
HOLLAND. 19
GERMANY. 16
UNITED STATES. 8
IRELAND 7
FRANCE. 6
GREAT BRITAIN. 5
ITALY 4
CANADA. 3
COMPARED WITH OTHER NATIONS ON THE BASIS OF THE NUMBER OF ANIMALS TO THE HUNDRED ACRES OF LAND IN FARMS.

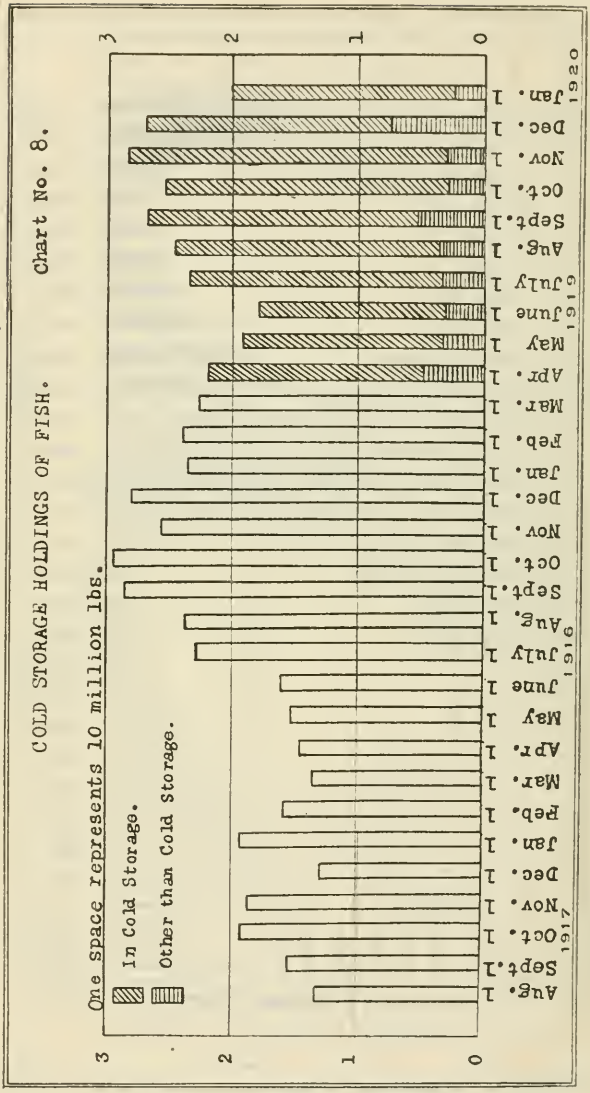


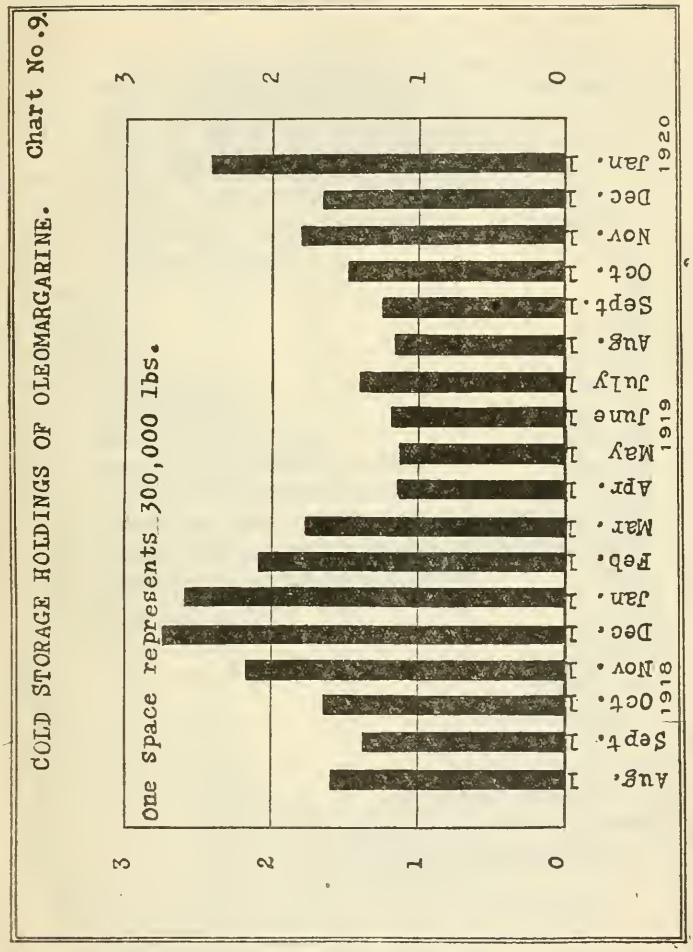

COLD STORAGE HOLDINGS OF BEEF.
Chart No. 4.
One space represents 20 million pounds.
Frozen
Not frozen
Cured
In process of care.
3
2
1
0
1918
1919
1920
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1


PORK IN COLD STORAGE AND IN PROCESS OF CURE.
Chart No. 5.
One space represents 20 million pounds.
Frozen
Not Frozen
Dry Salted
Sweet Pickled
In process of Cure
0
1
2
3
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
1917
1918
1919
1920


COLD STORAGE HOLDINGS OF MUTTON AND LAMB
Chart No. 6.
One space represents 2½ million lbs.
Frozen
Not frozen
0
1
2
3
4
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
1917
1918
1919
1920


COLD STORAGE HOLDINGS OF POULTRY. Chart No. 7.
One space represents 3 million lbs.
Broilers
Chickens
Fowl
Ducks
Geese
Turkeys
Unclassified
0
1
2
3
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
1917
1918
1919
1920


COLD STORAGE HOLDINGS OF FISH. Chart No. 8.
One space represents 10 million lbs.
In Cold Storage.
Other than Cold Storage.
0
1
2
3
Aug. 1917
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1918
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1919
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1920
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1


COLD STORAGE HOLDINGS OF OLEOMARGARINE. Chart No.9.
One space represents 300,000 lbs.
0
1
2
3
Aug. 1918
Sept.
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May 1919
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Jan. 1920

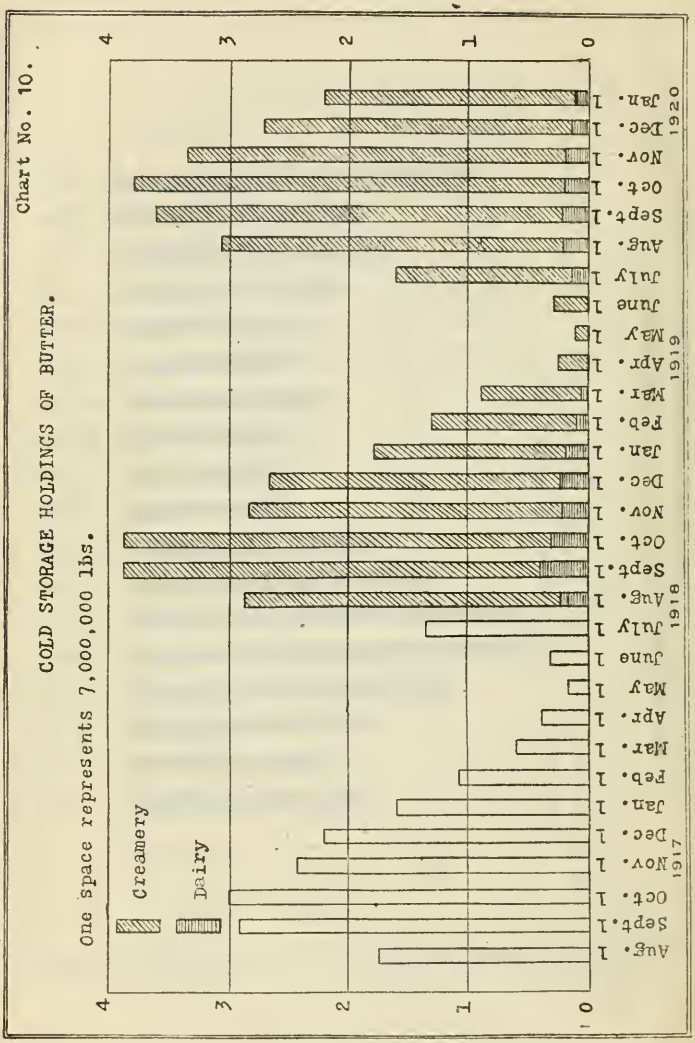


Chart No. 10.
COLD STORAGE HOLDINGS OF BUTTER.
One space represents 7,000,000 lbs.
Creamery
Dairy
0
1
2
3
4
1917
1918
1919
1920
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1

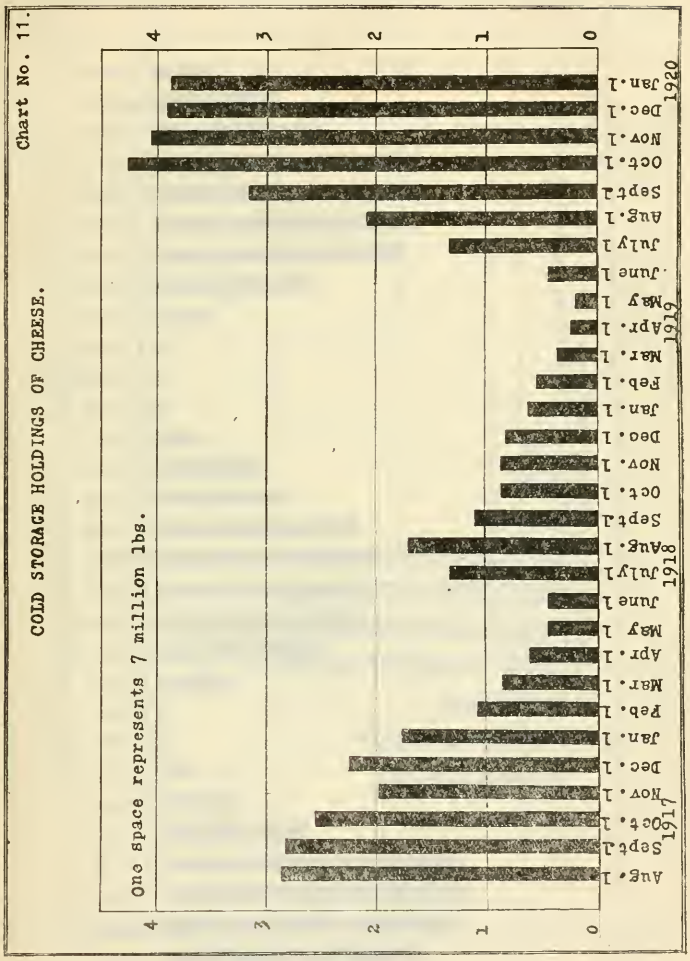


Chart No. 11.
COLD STORAGE HOLDINGS OF CHEESE.
One space represents 7 million lbs.
0
1
2
3
4
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
1917
1918
1919
1920

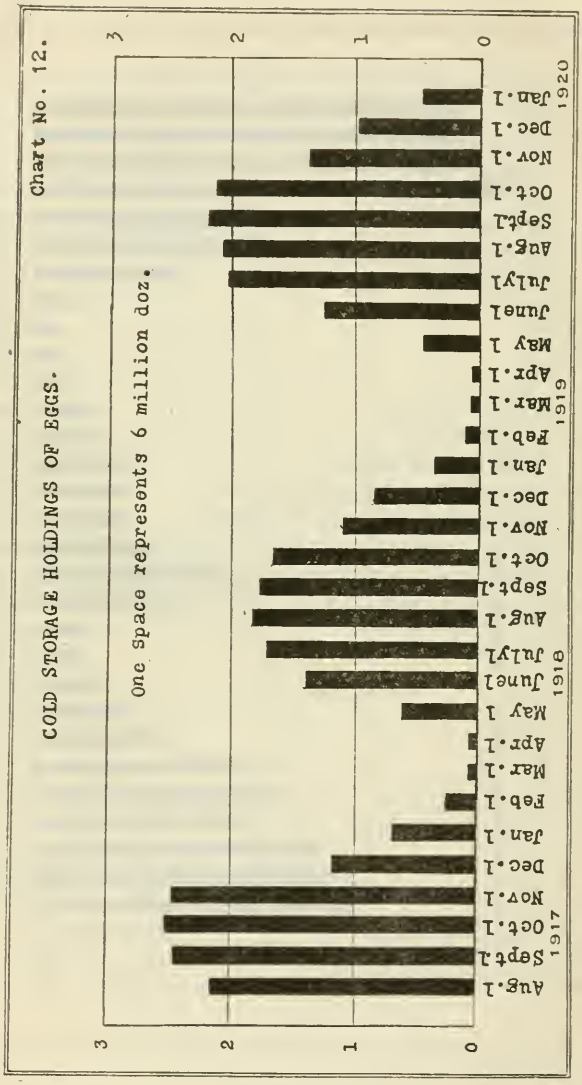
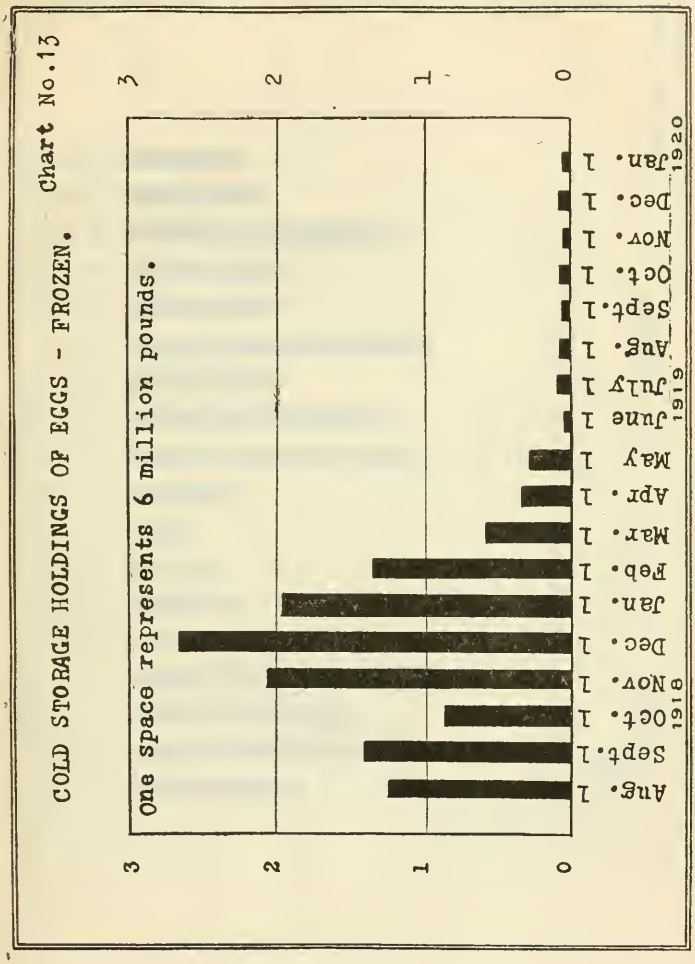
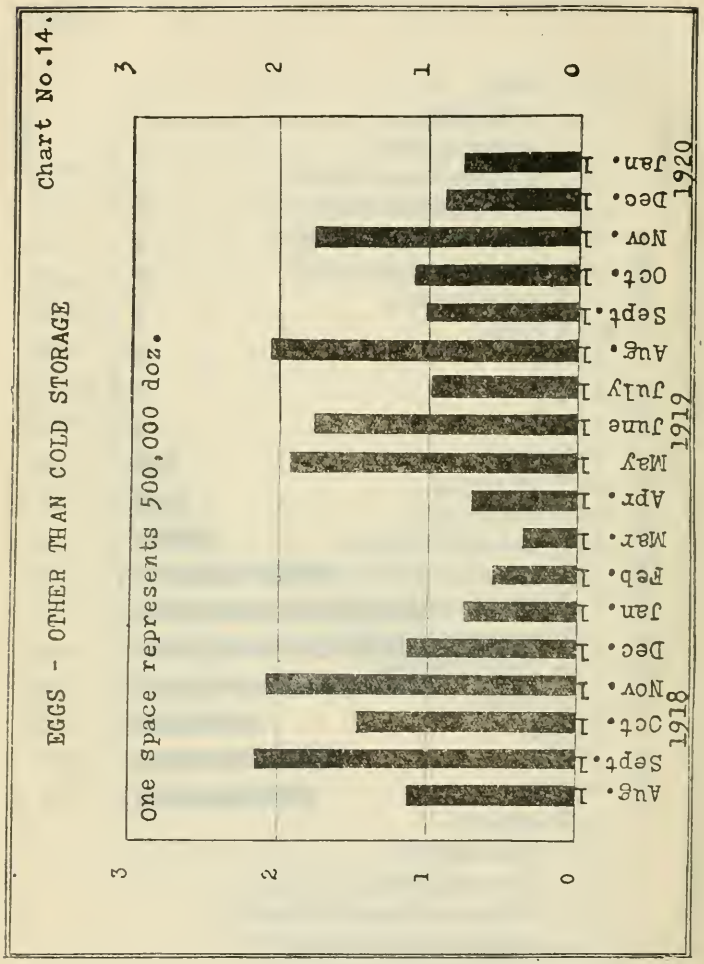
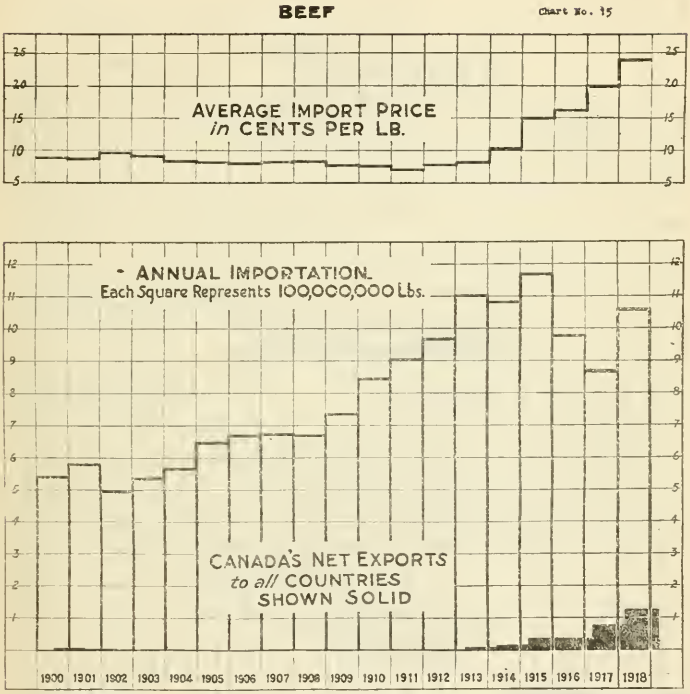


Chart No. 12.
COLD STORAGE HOLDINGS OF EGGS.
One Space represents 6 million doz.
0
1
2
3
Aug.1
Sept.1
Oct.1
Nov.1
Dec.1
Jan.1
Feb.1
Mar.1
Apr.1
May 1
June1
July1
Aug.1
Sept.1
Oct.1
Nov.1
Dec.1
Jan.1
Feb.1
Mar.1
Apr.1
May 1
June1
July1
Aug.1
Sept.1
Oct.1
Nov.1
Dec.1
Jan.1
1917
1918
1919
1920


COLD STORAGE HOLDINGS OF EGGS - FROZEN. Chart No.13
One space represents 6 million pounds.
3
2
1
0
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
1918
1919
1920


EGGS - OTHER THAN COLD STORAGE
Chart No.14.
One space represents 500,000 doz.
3
2
1
0
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
Feb. 1
Mar. 1
Apr. 1
May 1
June 1
July 1
Aug. 1
Sept. 1
Oct. 1
Nov. 1
Dec. 1
Jan. 1
1918
1919
1920


BEEF
Chart No. 15
AVERAGE IMPORT PRICE
in CENTS PER LB.
25
20
15
10
5
ANNUAL IMPORTATION.
Each Square Represents 100,000,000 Lbs.
CANADA'S NET EXPORTS
to all COUNTRIES
SHOWN SOLID
1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

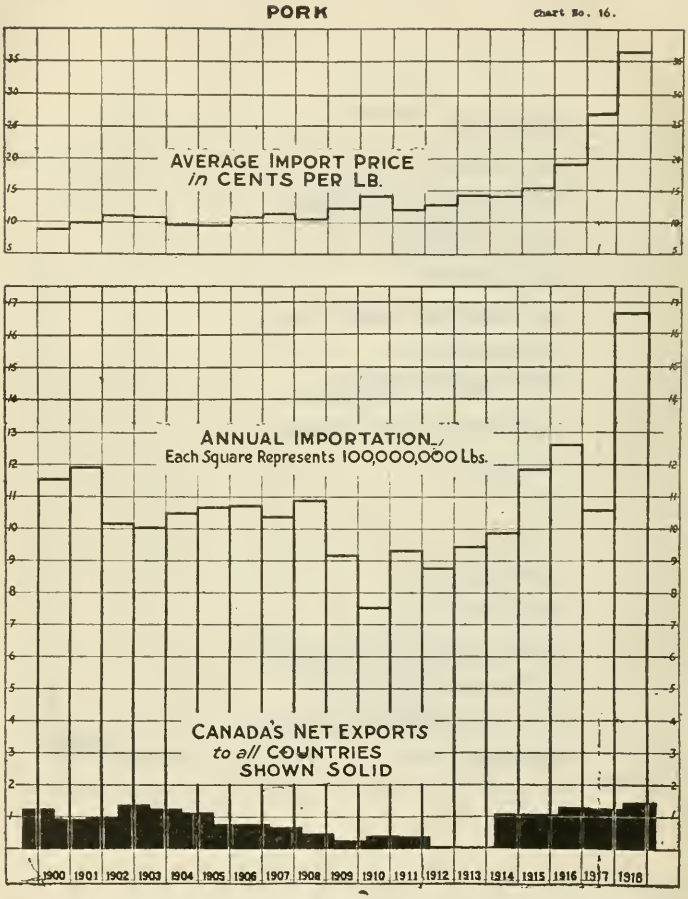
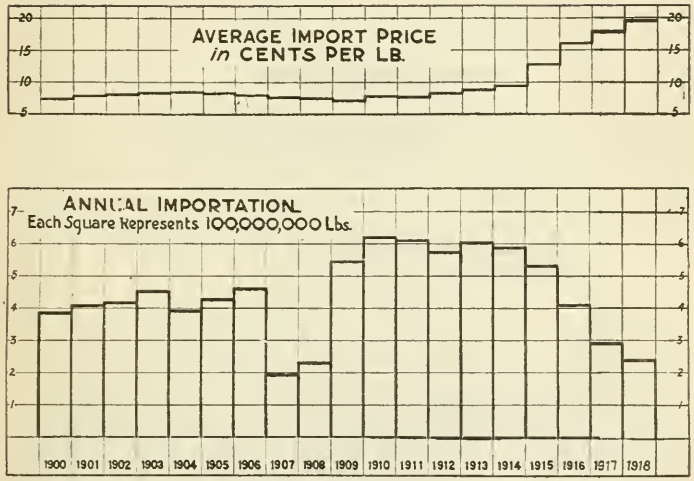

PORK
Chart No. 16.
AVERAGE IMPORT PRICE
in CENTS PER LB.
ANNUAL IMPORTATION
Each Square Represents 100,000,000 Lbs.
CANADA'S NET EXPORTS
to all COUNTRIES
SHOWN SOLID
1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

Chart No. 17.

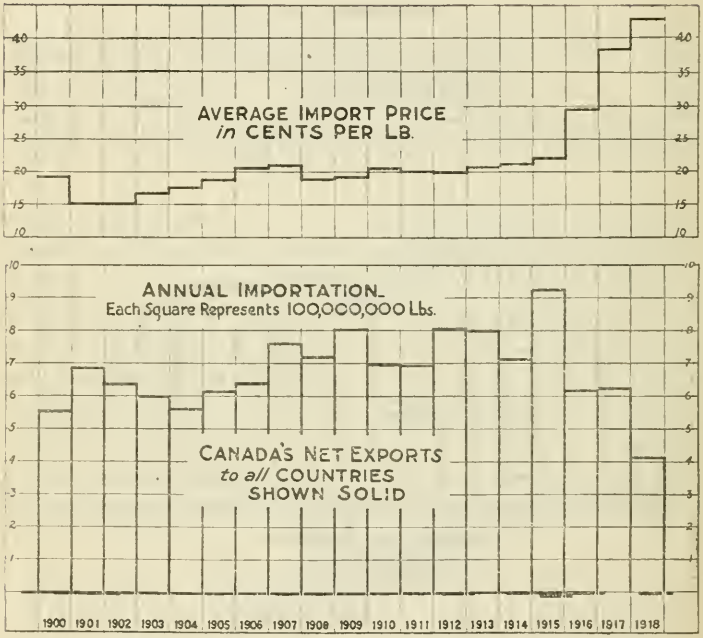
MUTTON

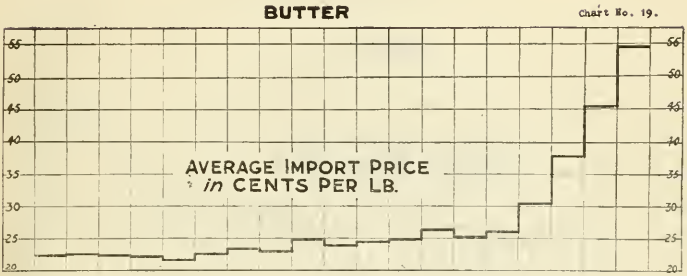


CANADA'S NET EXPORTS
to all COUNTRIES
SHOWN SOLID

Chart No 18

WOOL




BUTTER
Chart No. 19.
55
50
45
40
35
30
25
20
AVERAGE IMPORT PRICE
in CENTS PER LB.

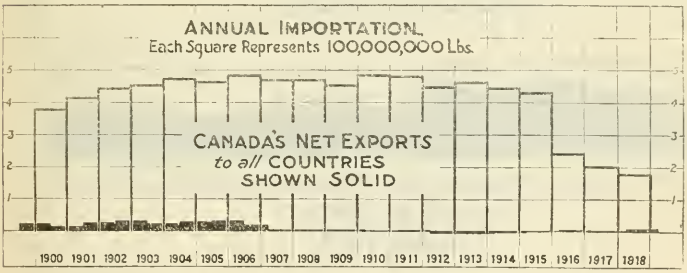
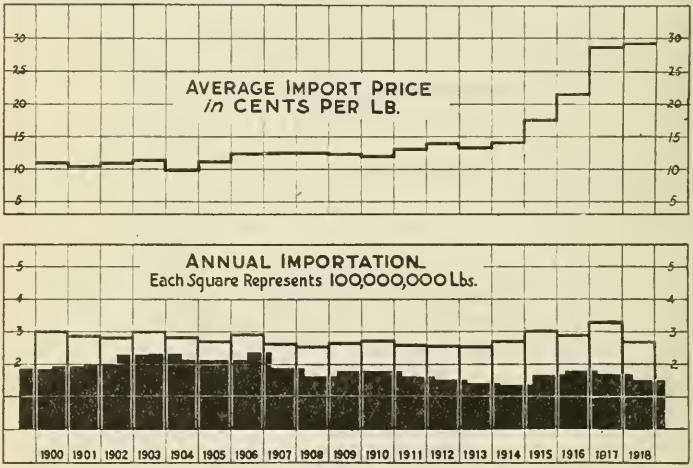

ANNUAL IMPORTATION.
Each Square Represents 100,000,000 Lbs.
5
4
3
2
1
CANADA'S NET EXPORTS
to all COUNTRIES
SHOWN SOLID
1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

Chart No. 20.

CHEESE



CANADA'S NET EXPORTS
to all COUNTRIES
SHOWN SOLID

Chart No 21.

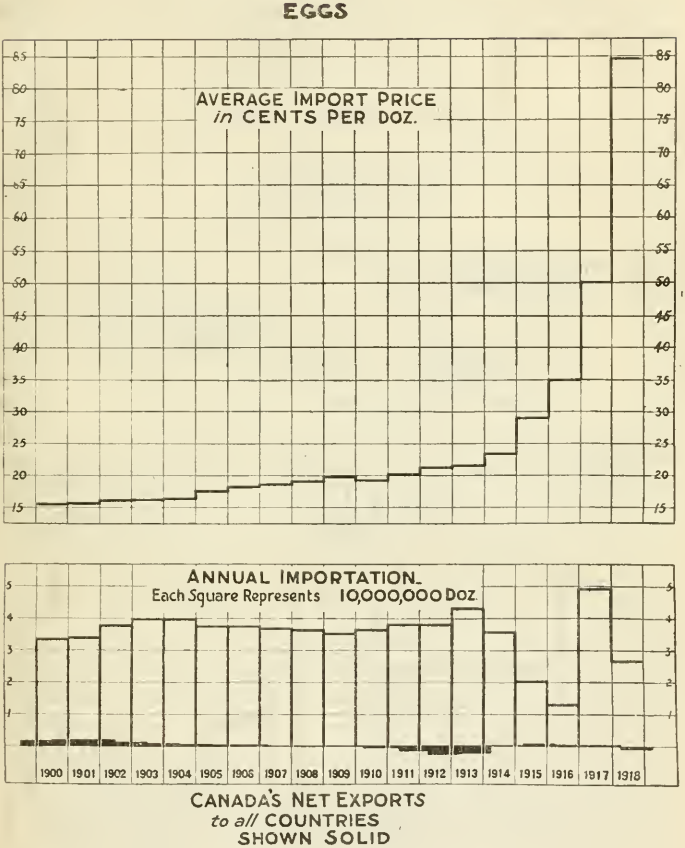

EGGS
AVERAGE IMPORT PRICE
in CENTS PER DOZ.
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
ANNUAL IMPORTATION.
Each Square Represents 10,000,000 Doz.
5
4
3
2
1
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
CANADA'S NET EXPORTS
to all COUNTRIES
SHOWN SOLID

CHART No 22

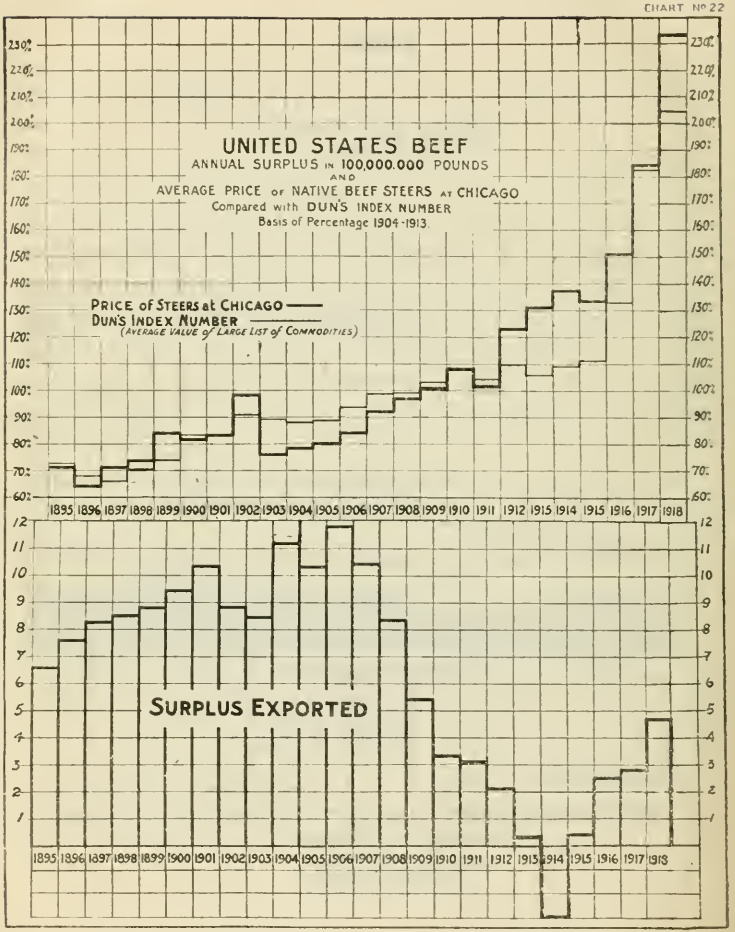

UNITED STATES BEEF
ANNUAL SURPLUS IN 100,000,000 POUNDS
AND
AVERAGE PRICE OF NATIVE BEEF STEERS AT CHICAGO
Compared with DUN'S INDEX NUMBER
Basis of Percentage 1904-1913.
PRICE of STEERS at CHICAGO
DUN'S INDEX NUMBER
(AVERAGE VALUE of LARGE LIST of COMMODITIES)
SURPLUS EXPORTED
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

Chart No. 23

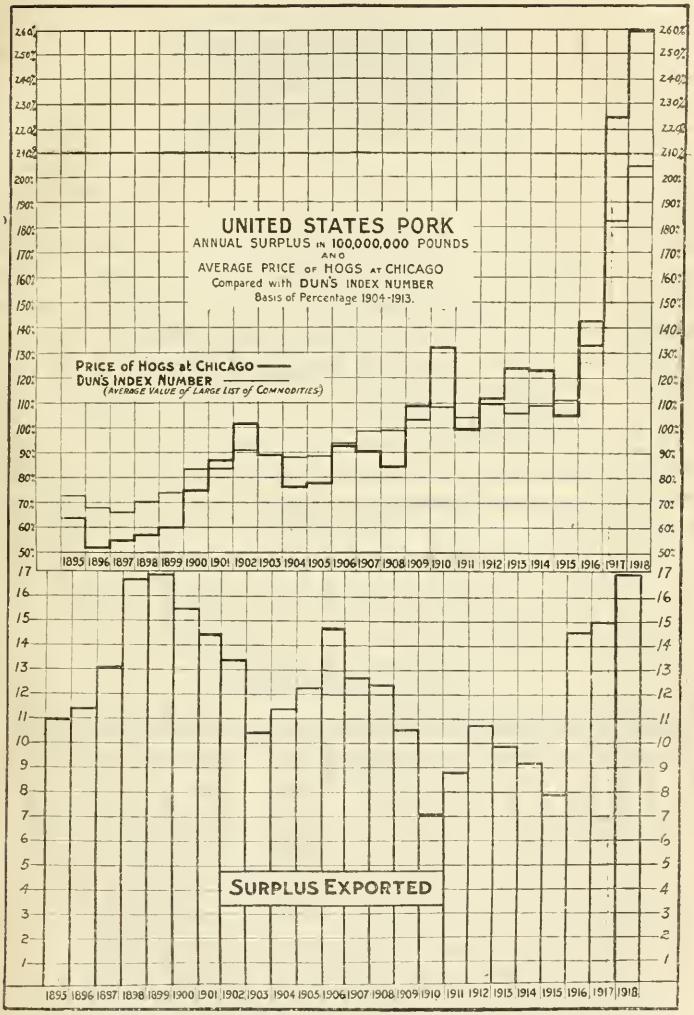
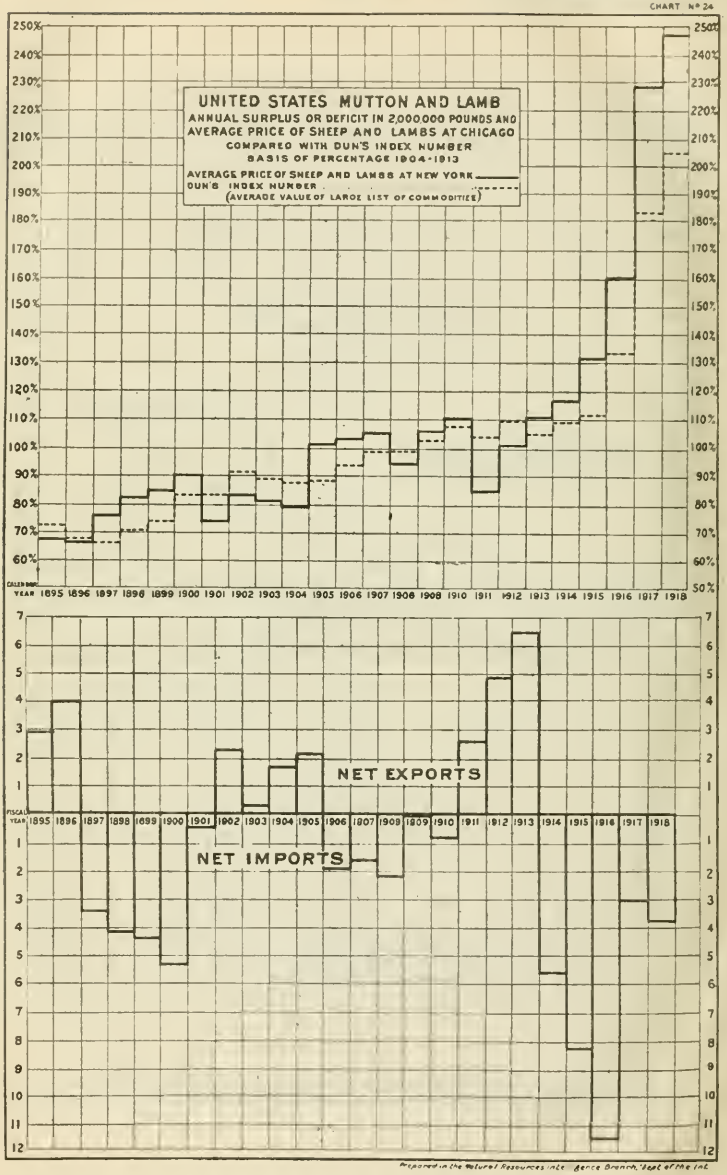
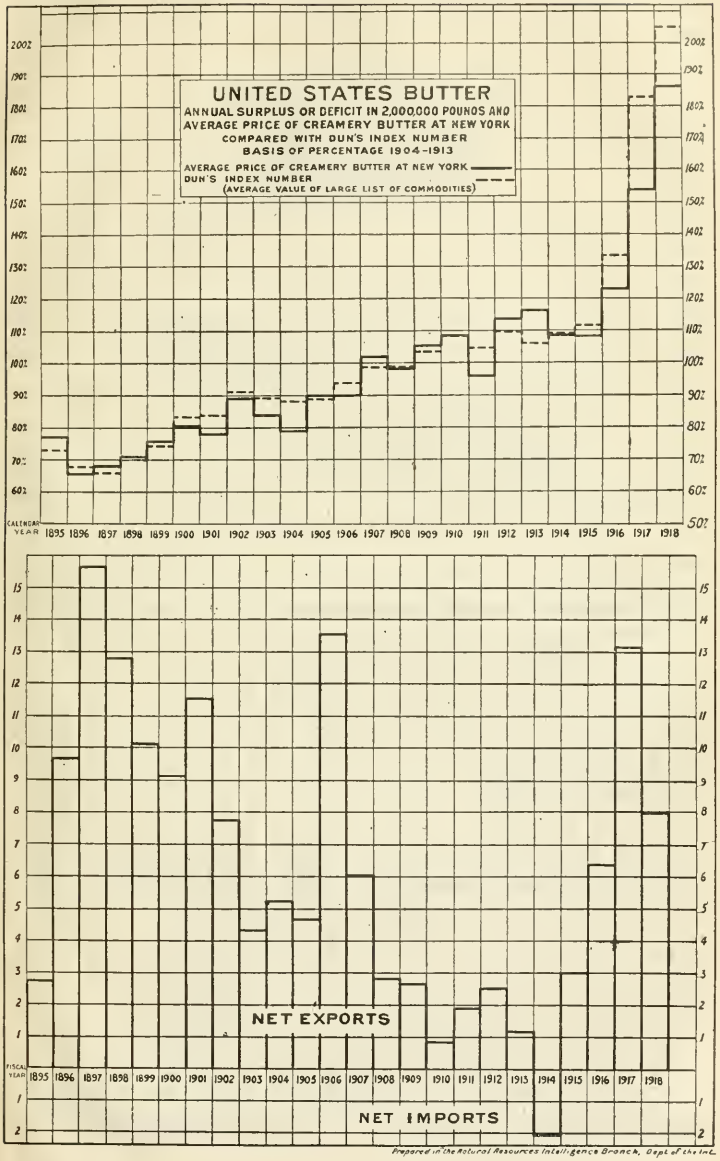

UNITED STATES PORK
ANNUAL SURPLUS IN 100,000,000 POUNDS
AND
AVERAGE PRICE OF HOGS AT CHICAGO
Compared with DUN'S INDEX NUMBER
Basis of Percentage 1904-1913.
PRICE of HOGS at CHICAGO
DUN'S INDEX NUMBER
(AVERAGE VALUE of LARGE LIST of COMMODITIES)
SURPLUS EXPORTED
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

CHART N° 24


UNITED STATES MUTTON AND LAMB
ANNUAL SURPLUS OR DEFICIT IN 2,000,000 POUNDS AND AVERAGE PRICE OF SHEEP AND LAMBS AT CHICAGO
COMPARED WITH DUN'S INDEX NUMBER
BASIS OF PERCENTAGE 1904-1913
AVERAGE PRICE OF SHEEP AND LAMBS AT NEW YORK
DUN'S INDEX NUMBER
(AVERAGE VALUE OF LARGE LIST OF COMMODITIES)
CALENDAR YEAR 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918
NET EXPORTS
NET IMPORTS
FISCAL YEAR 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

Prepared in the Natural Resources Sec. Agric. Branch, Dept. of the Int.

CHART No 25


UNITED STATES BUTTER
ANNUAL SURPLUS OR DEFICIT IN 2,000,000 POUNDS AND AVERAGE PRICE OF CREAMERY BUTTER AT NEW YORK COMPARED WITH DUN'S INDEX NUMBER
BASIS OF PERCENTAGE 1904-1913
AVERAGE PRICE OF CREAMERY BUTTER AT NEW YORK
DUN'S INDEX NUMBER
(AVERAGE VALUE OF LARGE LIST OF COMMODITIES)
CALENDAR YEAR
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918
NET EXPORTS
NET IMPORTS
FISCAL YEAR
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

Prepared in the Natural Resources Intelligence Branch, Dept. of the Int.

CHART No 26

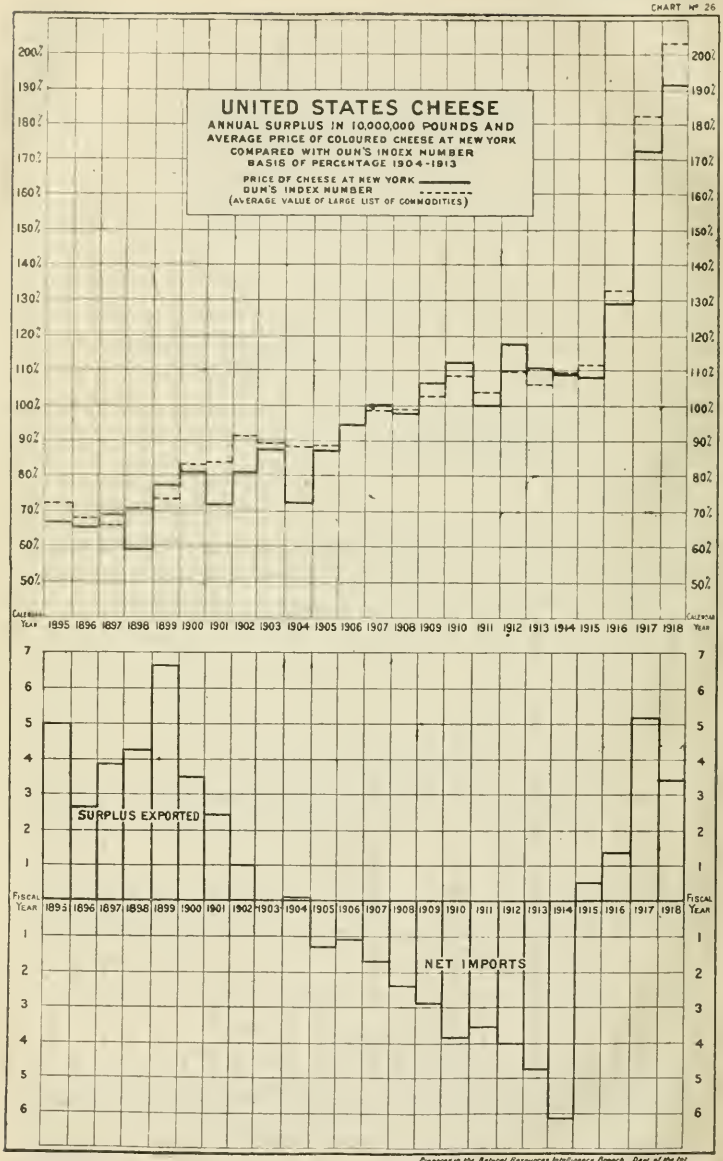


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CHART No 27

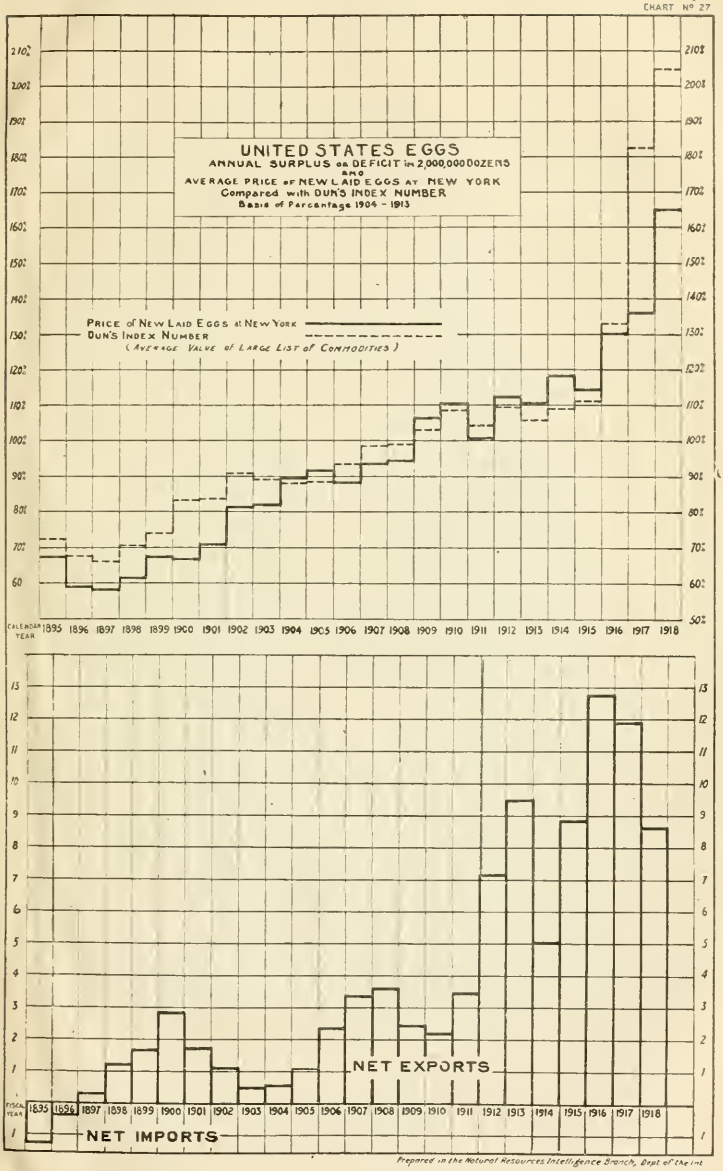
UNITED STATES EGGS
ANNUAL SURPLUS or DEFICIT in 2,000,000 DOZENS
and
AVERAGE PRICE of NEW LAID EGGS at NEW YORK
Compared with DUN'S INDEX NUMBER
Basis of Percentage 1904 - 1913
PRICE of NEW LAID EGGS at NEW YORK
DUN'S INDEX NUMBER
(AVERAGE VALUE of LARGE LIST of COMMODITIES)
CALENDAR YEAR
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918
NET EXPORTS
NET IMPORTS
FISCAL YEAR
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918

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CHART Nº 28

COMPARISON OF LIVESTOCK RECEIPTS WITH PRICES

(CATTLE)

LEGEND

NUMBER RECEIVED.

MONTHLY AVERAGE PRICE PER CWT IN DOLLARS

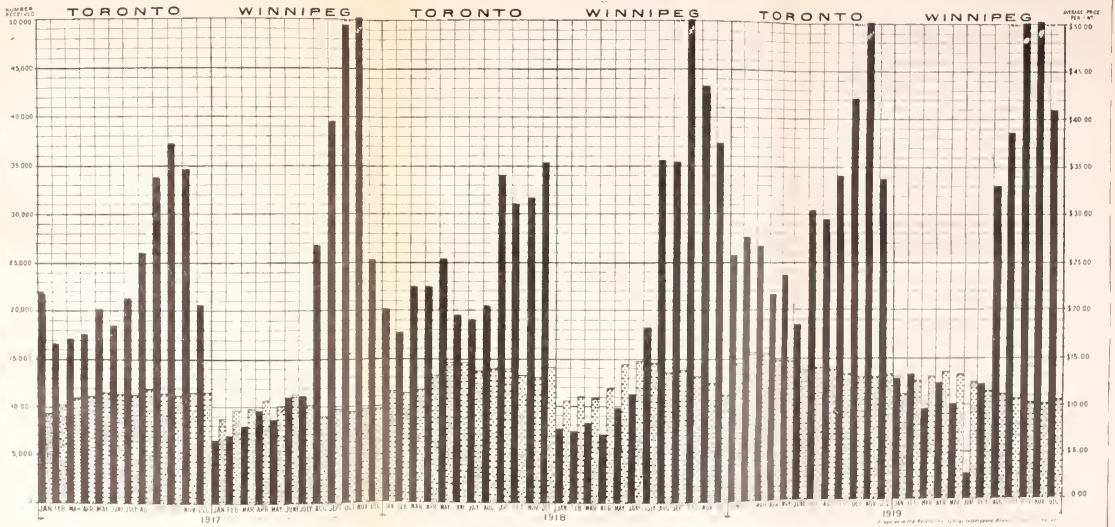


Chart No 29

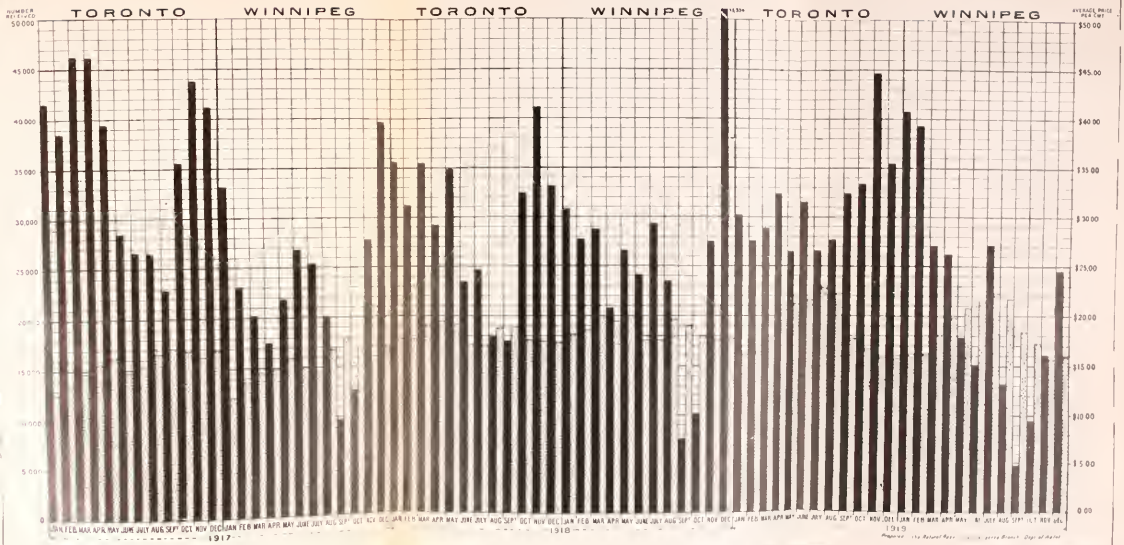
COMPARISON OF LIVESTOCK RECEIPTS WITH PRICES

(SWINE)

LEGEND

NUMBER RECEIVED

MONTHLY AVERAGE PRICE PER CWT. IN DOLLARS



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